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FIELD INVESTIGATIONS OF UNCONTROLLED HAZARDOUS WASTE SITES

FIT PROJECT

ORIGINAL (Red)

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TASK REPORT TO THE ENVIRONMENTAL PROTECTION AGENCY CONTRACT NO. 68-01-6056

ORIGINAL (Red)

FIELD INVESTIGATIONS OF UNCONTROLLED HAZARDOUS WASTE SITES

FIT PROJECT

TASK REPORT TO THE ENVIRONMENTAL PROTECTION AGENCY CONTRACT NO. 68-01-6056

REPORT ON

Pigeon Point Landfill
New Castle, Delaware

TDD No. F3-8101-17
EPA No. DE - 27

Prepared By: non responsive based on revised scope
Submitted To: "non responsive based on revised scope"

ecology and environment, inc.

International Specialists in the Environmental Sciences

ORIGINAL (Red)

AN ON-SITE INSPECTION
OF
PIGEON POINT LANDFILL
TDD # F3-8101-17
EPA # DE-27

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SECTION 1

TDD No. F3-8101-17 EPA No. DE-27

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

REGION	SITE NUMBER (to be assigned by Hq)
III	

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GENERAL INSTRUCTIONS: Complete Sections I and III through XV of this form as completely as possible. Then use the information on this form to develop a Tentative Disposition *(Section II)*. File this form in its entirety in the regional Hazardous Waste Log File. Be sure to include all appropriate Supplemental Reports in the file. Submit a copy of the forms to: U.S. Environmental Protection Agency; Site Tracking System; Hazardous Waste Enforcement Task Force *(EN-335)*; 401 M St., SW; Washington, DC 20460.

I. SITE IDENTIFICATION

A. SITE NAME	B. STREET (or other identifier)		
Pigeon Point Landfill	One Pigeon Point Road		
C. CITY	**D. STATE**	**E. ZIP CODE**	**F. COUNTY NAME**
New Castle	DE	19720	New Castle

G. SITE OPERATOR INFORMATION

1. NAME	2. TELEPHONE NUMBER		
(for landfill - Ray Trout; 302-571-3457) Delaware Solid Waste Authority - Pat Canzano	302-736-5361		
3. STREET	**4. CITY**	**5. STATE**	**6. ZIP CODE**
P. O. Box 981	Dover	DE	19901

H. REALTY OWNER INFORMATION *(If different from operator of site)*

1. NAME	2. TELEPHONE NUMBER	
3. CITY	**4. STATE**	**5. ZIP CODE**

I. SITE DESCRIPTION
State operated landfill

J. TYPE OF OWNERSHIP
☐ 1. FEDERAL ☒ 2. STATE ☐ 3. COUNTY ☐ 4. MUNICIPAL ☐ 5. PRIVATE

II. TENTATIVE DISPOSITION *(complete this section last)*

A. ESTIMATE DATE OF TENTATIVE DISPOSITION (mo., day, & yr.)	B. APPARENT SERIOUSNESS OF PROBLEM
02/23/81	☐ 1. HIGH ☐ 2. MEDIUM ☒ 3. LOW ☐ 4. NONE

C. PREPARER INFORMATION

1. NAME	2. TELEPHONE NUMBER	3. DATE (mo., day, & yr.)
Alton Day Stone	609-665-1515	02/08/81

III. INSPECTION INFORMATION

A. PRINCIPAL INSPECTOR INFORMATION

1. NAME	2. TITLE	
non responsive based on revised scope	Environmental Scientist	
3. ORGANIZATION		**4. TELEPHONE NO. (area code & no.)**
Ecology & Environment, Inc.		609-665-1515

B. INSPECTION PARTICIPANTS

1. NAME	2. ORGANIZATION	3. TELEPHONE NO.
non responsive based on revised scope	Ecology & Environment, Inc.	609-665-1515
	Ecology & Environment, Inc.	609-665-1515
	Ecology & Environment, Inc.	609-665-1515
	Ecology & Environment, Inc.	609-665-1515
	Ecology & Environment, Inc.	609-665-1515
	Ecology & Environment, Inc.	609-665-1515

C. SITE REPRESENTATIVES INTERVIEWED *(corporate officials, workers, residents)*

1. NAME	2. TITLE & TELEPHONE NO.	3. ADDRESS
non responsive based on revised scope	Manager 302-571-3457	
	Environ. Scientist 302-783-0703	Duffield Associates, Newark, DE
	Environ. Scientist 302-783-0703	Duffield Associates, Newark, DE
	Environ. Scientist 302-783-0703	Duffield Associates, Newark, DE

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III. INSPECTION INFORMATION (continued)

D. GENERATOR INFORMATION (sources of waste)

1. NAME	2. TELEPHONE NO.	3. ADDRESS	4. WASTE TYPE GENERATED
Chrysler Auto	302-453-5000	500 South College Avenue Newark, Delaware	Paint pigments
Getty Oil Co.	302-834-6000	Wrangle Hill Road Delaware City, Delaware	Unknown
Stauffer Chemical	302-834-4516	School House Road Delaware City, Delaware	PVC Wastes

E. TRANSPORTER/HAULER INFORMATION

1. NAME	2. TELEPHONE NO.	3. ADDRESS	4. WASTE TYPE TRANSPORTED
WASTE HAULED BY LOCAL MUNICIPAL DISPOSAL COMPANIES AND NUMEROUS PRIVATE CONTRACTORS.			
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F. IF WASTE IS PROCESSED ON SITE AND ALSO SHIPPED TO OTHER SITES, IDENTIFY OFF-SITE FACILITIES USED FOR DISPOSAL.

1. NAME	2. TELEPHONE NO.	3. ADDRESS

G. DATE OF INSPECTION (mo., day, & yr.)	H. TIME OF INSPECTION	I. ACCESS GAINED BY: (credentials must be shown in all cases)
02/05/81	0430 - 1730	[X] 1. PERMISSION [ ] 2. WARRANT

J. WEATHER (describe)

Cool (20° F), clear, sunny, wind 5-10 mph from the SW

IV. SAMPLING INFORMATION

A. Mark 'X' for the types of samples taken and indicate where they have been sent e.g., regional lab, other EPA lab, contractor, etc. and estimate when the results will be available.

1. SAMPLE TYPE	2. SAMPLE TAKEN (mark 'X')	3. SAMPLE SENT TO:	4. DATE RESULTS AVAILABLE
a. GROUNDWATER	x	West Coast Technical Services Inc.; VERSAR	03/05/81
b. SURFACE WATER	x	West Coast Technical Services Inc.; VERSAR	03/05/81
c. WASTE	N/A		
d. AIR	N/A		
e. RUNOFF	x	West Coast Technical Services Inc.; VERSAR	03/05/81
f. SPILL	N/A		
g. SOIL	x	NEIC	
h. VEGETATION	N/A		
i. OTHER (specify) Leachate	x	West Coast Technical Services Inc.; VERSAR	03/05/81

B. FIELD MEASUREMENTS TAKEN (e.g., radioactivity, explosivity, PH, etc.)

1. TYPE	2. LOCATION OF MEASUREMENTS	3. RESULTS
pH of groundwater	Well #1A; Well #28	6.4 (#1A); 6.8 (#28)
Conductivity (not temp. corrected)	Well #1A; Well #28	3000 (mohms)(#1A);1,150 ppm (#28)
OVA, HNU	See Attachment 6.1	Total dissolved solids

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IV. SAMPLING INFORMATION (continued)

C. PHOTOS

1. TYPE OF PHOTOS: [XX] a. GROUND [ ] b. AERIAL

2. PHOTOS IN CUSTODY OF: Ecology & Environment, Inc., FIT Region III

D. SITE MAPPED?

[XX] YES. SPECIFY LOCATION OF MAPS: In attachment to this report and at Ecology & Environment, Inc., FIT Region III

E. COORDINATES

1. LATITUDE (deg.-min.-sec.): 39° 42' N

2. LONGITUDE (deg.-min.-sec.): 75° 32' W

V. SITE INFORMATION

A. SITE STATUS

[X] 1. ACTIVE (Those inductrial or municipal sites which are being used for waste treatment, storage, or disposal on a continuing basis, even if infrequently.)

[ ] 2. INACTIVE (Those sites which no longer receive wastes.).

[ ] 3. OTHER (specify): _____ (Those sites that include such incidents like "midnight dumping" where no regular or continuing use of the site for waste disposal has occurred.).

B. IS GENERATOR ON SITE?

[X] 1. NO [ ] 2. YES (specify generator's four-digit SIC Code): _____

C. AREA OF SITE (in acres): 186 total/136 in use

D. ARE THERE BUILDINGS ON THE SITE?

[ ] 1. NO [X] 2. YES (specify): Six (6) buildings - offices, maintenance, scales, shredder plant

VI. CHARACTERIZATION OF SITE ACTIVITY

Indicate the major site activity(ies) and details relating to each activity by marking 'X' in the appropriate boxes.

'X'	A. TRANSPORTER	'X'	B. STORER	'X'	C. TREATER	'X'	D. DISPOSER
	1. RAIL		1. PILE		1. FILTRATION	X	1. LANDFILL
	2. SHIP		2. SURFACE IMPOUNDMENT		2. INCINERATION		2. LANDFARM
	3. BARGE		3. DRUMS		3. VOLUME REDUCTION		3. OPEN DUMP
	4. TRUCK		4. TANK, ABOVE GROUND		4. RECYCLING/RECOVERY		4. SURFACE IMPOUNDMENT
	5. PIPELINE		5. TANK, BELOW GROUND		5. CHEM./PHYS./TREATMENT		5. MIDNIGHT DUMPING
	6. OTHER (specify):		6. OTHER (specify):		6. BIOLOGICAL TREATMENT		6. INCINERATION
					7. WASTE OIL REPROCESSING		7. UNDERGROUND INJECTION
					8. SOLVENT RECOVERY	X	8. OTHER (specify): Waste shredder
					9. OTHER (specify):		

E. SUPPLEMENTAL REPORTS: If the site falls within any of the categories listed below, Supplemental Reports must be completed. Indicate which Supplemental Reports you have filled out and attached to this for..

[ ] 1. STORAGE [ ] 2. INCINERATION [XX] 3. LANDFILL [ ] 4. SURFACE IMPOUNDMENT [ ] 5. DEEP WELL

[ ] 6. CHEM/BIO/PHYS TREATMENT [ ] 7. LANDFARM [ ] 8. OPEN DUMP [ ] 9. TRANSPORTER [ ] 10. RECYCLOR/RECLAIMER

VII. WASTE RELATED INFORMATION

A. WASTE TYPE

[ ] 1. LIQUID [X] 2. SOLID [X] 3. SLUDGE [ ] 4. GAS

*stopped accepting industrial sludges (11/18/80)

B. WASTE CHARACTERISTICS

[ ] 1. CORROSIVE [X] 2. IGNITABLE [ ] 3. RADIOACTIVE [ ] 4. HIGHLY VOLATILE

[X] 5. TOXIC [X] 6. REACTIVE [ ] 7. INERT [ ] 8. FLAMMABLE

[X] 9. OTHER (specify): Municipal and Industrial; sewage and industrial sludges

C. WASTE CATEGORIES

1. Are records of wastes available? Specify items such as manifests, inventories, etc. below.

Partial lists; at landfill office

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VII. WASTE RELATED INFORMATION (continued)

2. Estimate the amount (specify unit of measure) of waste by category; mark 'X' to indicate which wastes are present.

a. SLUDGE	b. OIL	c. SOLVENTS	d. CHEMICALS	e. SOLIDS	f. OTHER
AMOUNT: Unknown	AMOUNT:	AMOUNT: Unknown	AMOUNT:	AMOUNT: 1500	AMOUNT:
UNIT OF MEASURE:	UNIT OF MEASURE:	UNIT OF MEASURE:	UNIT OF MEASURE:	UNIT OF MEASURE: tons/day	UNIT OF MEASURE:
X (1) PAINT, PIGMENTS	X (1) OILY WASTES	X (1) HALOGENATED SOLVENTS	X (1) ACIDS	X (1) FLYASH	X (1) LABORATORY, PHARMACEUT.
X (2) METALS SLUDGES	(2) OTHER(specify):	(2) NON-HALOGNTD. SOLVENTS	(2) PICKLING LIQUORS	(2) ASBESTOS	(2) HOSPITAL
(3) POTW		X (3) OTHER(specify): Toluene - a midnight dumping incidence	(3) CAUSTICS	(3) MILLING/MINE TAILINGS	(3) RADIOACTIVE
(4) ALUMINUM SLUDGE			(4) PESTICIDES	(4) FERROUS SMELTING WASTES	(4) MUNICIPAL
X (5) OTHER(specify): PVC Wastes; Sewage Sludges			(5) DYES/INKS	(5) NON-FERROUS SMLTG. WASTES	(5) OTHER(specify):
			(6) CYANIDE	X (6) OTHER(specify): Municipal Wastes	
			(7) PHENOLS		
			(8) HALOGENS		
			(9) PCB		
			(10) METALS		
			(11) OTHER(specify):		

D. LIST SUBSTANCES OF GREATEST CONCERN WHICH ARE ON THE SITE (place in descending order of hazard)

1. SUBSTANCE	2. FORM (mark 'X') a. SOLID	b. LIQ.	c. VAPOR	3. TOXICITY (mark 'X') a. HIGH	b. MED.	c. LOW	d. NONE	4. CAS NUMBER	5. AMOUNT	6. UNIT
PVC Wastes	X				X			75-01-4	Unknown	
Toluene		X			X			108-88-3	Unknown	
Paint Pigments	X					X			Unknown	

VIII. HAZARD DESCRIPTION

FIELD EVALUATION HAZARD DESCRIPTION: Place an 'X' in the box to indicate that the listed hazard exists. Describe the hazard in the space provided.

X A. HUMAN HEALTH HAZARDS

There is a possible human health problem, for those personnel working in the immediate vicinity of the sump-pump wet well, for the south perimeter leachate and surface run-off collection ditch, due to the high level of organic vapors (to 150 ppm, not methane) in the air. This may also include the entire ditch along the south perimeter. During inspection the ditch and pool were frozen and readings were only available from the wet well.

Continue On Page 5

VIII. HAZARD DESCRIPTION (continued)

☐ B. NON-WORKER INJURY/EXPOSURE

No record of this

☒ C. WORKER INJURY/EXPOSURE

There is an alleged incidence of a worker being caught in the conveyer in the shredder plant. This accident is not related to toxic-chemical waste problems.

☒ D. CONTAMINATION OF WATER SUPPLY

The landfill is located over the Potomac Aquifer, a major water source for the region. There are several industrial and private water companies to the immediate southwest which produce a heavy draw down in the area. Tentative inspection of an incomplete piezometric gradient indicates groundwater is moving eastward into the Delaware River. There is reason to believe that the zone of depression from the southwest draw down may be intersecting or influencing the groundwater movement. If there are contaminents being leached from the landfill they could be entering local water supplies. Sample results will help to determine if there is a problem.

☐ E. CONTAMINATION OF FOOD CHAIN

None recorded or observed. If PVC, metals or other contaminents are being leached or washed from the landfill, they could be entering local food chains.

☒ F. CONTAMINATION OF GROUND WATER

Possible, See VIII D., Above.

☒ G. CONTAMINATION OF SURFACE WATER

Possible source of contamination to the Delaware River due to groundwater and surface run-off. Also, the leachate and surface run-off ditch along the south perimeter, in periods of extreme high precipitation, run-off through this dutch goes directly into the Delaware River rather than into the collection pond to be pumped to a treatment plant. See VIII P.

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VIII. HAZARD DESCRIPTION (continued)

☐ H. DAMAGE TO FLORA/FAUNA

None Observed

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☐ I. FISH KILL

None Observed

☒ J. CONTAMINATION OF AIR

Methane levels to 50 ppm were recorded downwind of the landfill. There is an organic vapor contamination in the vicinity of the leachate collection ditch along the south perimeter. The ditch proper was frozen over, but readings to 130 ppm were recorded in the wet well from which the ditch is pumped out.

☒ K. NOTICEABLE ODORS

The usual odors associated with a landfill were noticed.

☐ L. CONTAMINATION OF SOIL

None Observed.

☐ M. PROPERTY DAMAGE

None Observed.

VIII. HAZARD DESCRIPTION (continued)

[X] N. FIRE OR EXPLOSION

There is a history of small fires in the refuse of the active section of the landfill. None were observed.

[X] O. SPILLS/LEAKING CONTAINERS/RUNOFF/STANDING LIQUID

There are several small pools, ponds and ditches on the outside of the landfill perimeter which contain run-off. None of these was observed to be directly receiving a chemical run-off or waste.

[X] P. SEWER, STORM DRAIN PROBLEMS Along the south perimeter of the landfill is a ditch which collects shallow leachate, seepage from the toe, and run-off. This effluent is collected in a small pond and pumped up into a sewer which leads to a treatment plant. The collection pond has a small weir, during periods of extremely high precipitation, run-off flows over the weir directly into the Delaware River, by passing the pump up to the treatment plant. This is a temporary system. The north and east perimeters of the landfill have an underdrain leachate collection system, collected leachate is pumped to a sewage treatment plant. A similar system is planned for the south perimeter but its installation is delayed until the construction of the planned steam generation plant.

[X] Q. EROSION PROBLEMS

None Observed.

[X] R. INADEQUATE SECURITY

Facility enclosed with fence.

[X] S. INCOMPATIBLE WASTES

Unknown

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VIII. HAZARD DESCRIPTION *(continued)*

[X] T. MIDNIGHT DUMPING

At least one recorded incidence involving Toluene.

[X] U. OTHER *(specify)*:

Until November 19, 1980, the facility received and buried in the landfill PVC wastes and paint and pigment wastes. The most serious potential problem is the contamination of the groundwater and public water supplies (Potomac Aquifer).

IX. POPULATION DIRECTLY AFFECTED BY SITE

A. LOCATION OF POPULATION	B. APPROX. NO. OF PEOPLE AFFECTED	C. APPROX. NO. OF PEOPLE AFFECTED WITHIN UNIT AREA	D. APPROX. NO. OF BUILDINGS AFFECTED	E. DISTANCE TO SITE *(specify units)*
1. IN RESIDENTIAL AREAS	Several residential areas within a 1.5 mile radium Probably 2 - 5 thousand people.			—
2. IN COMMERCIAL OR INDUSTRIAL AREAS	One large industrial complex within .5 mile radius Several hundred employees, up to 50 buildings			AW TA
3. IN PUBLICLY TRAVELLED AREAS	Located directly adjacent to I-295			TA
4. PUBLIC USE AREAS *(parks, schools, etc.)*				TA

X. WATER AND HYDROLOGICAL DATA

A. DEPTH TO GROUNDWATER *(specify unit)*	B. DIRECTION OF FLOW	C. GROUNDWATER USE IN VICINITY
5 ft.; 50' to Potomac Aquifer	Expected to the East, but unconfirmed; could be to the West.	public, private High - municipal wells
D. POTENTIAL YIELD OF AQUIFER	**E. DISTANCE TO DRINKING WATER SUPPLY** *(specify unit of measure)*	**F. DIRECTION TO DRINKING WATER SUPPLY**
High major aquifer	1.5 miles	Southwest

G. TYPE OF DRINKING WATER SUPPLY

[ ] 1. NON-COMMUNITY < 15 CONNECTIONS [X] 2. COMMUNITY *(specify town)*: Private water company supplying the public has wells within 2 mile radius > 15 CONNECTIONS

[ ] 3. SURFACE WATER [X] 4. WELL

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(Red)

Continued From Page 8

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X. WATER AND HYDROLOGICAL DATA (continued)

H. LIST ALL DRINKING WATER WELLS WITHIN A 1/4 MILE RADIUS OF SITE

1. WELL	2. DEPTH (specify unit)	3. LOCATION (proximity to population/buildings)	4. NON-COMMUNITY (mark 'X')	5. COMMUNITY (mark 'X')
#12	105 foot	ICI Americas, Atlas Point Plant. Private well in industrial facility which may be used for drinking. Other wells from this facility may also connect with drinking water outlets.	x	

RECEIVING WATER

1. NAME: Delaware River

☐ 2. SEWERS ☒ 3. STREAMS/RIVERS ☐ 4. LAKES/RESERVOIRS ☐ 5. OTHER (specify):

6. SPECIFY USE AND CLASSIFICATION OF RECEIVING WATERS

Major river in this region

XI. SOIL AND VEGITATION DATA

LOCATION OF SITE IS IN:

☐ A. KNOWN FAULT ZONE ☐ B. KARST ZONE ☒ C. 100 YEAR FLOOD PLAIN ☐ D. WETLAND

☐ E. A REGULATED FLOODWAY ☐ F. CRITICAL HABITAT ☐ G. RECHARGE ZONE OR SOLE SOURCE AQUIFER

XII. TYPE OF GEOLOGICAL MATERIAL OBSERVED

Mark 'X' to indicate the type(s) of geological material observed and specify where necessary, the component parts.

'X'	A. OVERBURDEN	'X'	B. BEDROCK (specify below)	'X'	C. OTHER (specify below)
X	1. SAND		The landfill is underlain by dredge spoils from the		
X	2. CLAY		Delaware and Christiana Rivers.		
	3. GRAVEL				

XIII. SOIL PERMEABILITY

☒ A. UNKNOWN ☐ B. VERY HIGH (100,000 to 1000 cm/sec.) ☐ C. HIGH (1000 to 10 cm/sec.)

☐ D. MODERATE (10 to .1 cm/sec.) ☐ E. LOW (.1 to .001 cm/sec.) ☐ F. VERY LOW (.001 to .00001 cm/sec.)

G. RECHARGE AREA

☒ 1. YES ☐ 2. NO 3. COMMENTS: Located on the outcrop of the Potomac Aquifer.

H. DISCHARGE AREA

☒ 1. YES ☐ 2. NO 3. COMMENTS: Possible discharge along contact with Delaware River. This was formerly a low marsh area characteristic of discharge points.

I. SLOPE

1. ESTIMATE % OF SLOPE: Flat to 5% Slope

2. SPECIFY DIRECTION OF SLOPE, CONDITION OF SLOPE, ETC.: to the East (Berms and dike walls excepted)

J. OTHER GEOLOGICAL DATA

The landfill and dredge spoils are underlain by several hundred feet of unconsolidated coastle and pleistocene deposites.

Continue On Reverse

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XIV. PERMIT INFORMATION

List all applicable permits held by the site and provide the related information.

A. PERMIT TYPE (e.g., RCRA, State, NPDES, etc.)	B. ISSUING AGENCY	C. PERMIT NUMBER	D. DATE ISSUED (mo., day, & yr.)	E. EXPIRATION DATE (mo., day, & yr.)	F. IN COMPLIANCE (mark 'X') 1. YES	2. NO	3. UNKNOWN
RCRA	DET	000647784-pp					X
Delaware State Permit		SW 80/12			X		

XV. PAST REGULATORY OR ENFORCEMENT ACTIONS

[XX] NONE [ ] YES (summarize in this space)

NOTE: Based on the information in Sections III through XV, fill out the Tentative Disposition *(Section II)* information on the first page of this form.

TDD No. F3-8101-17 ORIGINAL (Red) EPA No. DE-27

LANDFILLS SITE INSPECTION REPORT
(Supplemental Report)

INSTRUCTION
Answer and Explain as Necessary.

1. EVIDENCE OF SITE INSTABILITY *(Erosion, Settling, Sink Holes, etc)*
☐ YES ☒ NO

2. EVIDENCE OF IMPROPER DISPOSAL OF BULK LIQUIDS, SEMI-SOLIDS AND SLUDGES INTO THE LANDFILL
☐ YES ☒ NO

3. CHECK RECORDS OF CELL LOCATION AND CONTENTS AND BENCHMARK
☐ YES ☒ NO

4. WASTES SURROUNDED BY SORBENT MATERIAL
☐ YES ☒ NO

5. DIVERSION STRUCTURES ARE EFFECTIVELY CONSTRUCTED AND PROPERLY MAINTAINED
☒ YES ☐ NO

6. EVIDENCE OF PONDING OF WATER ON SITE
☐ YES ☒ NO Ponded water immediately off-site.

7. EVIDENCE OF IMPROPER/INADEQUATE DRAINING
☒ YES ☐ NO During periods of high ppt., run-off may drain directly into the Delaware River

8. ADEQUATE LEACHATE COLLECTION SYSTEM *(If "Yes", specify Type)*
☐ YES ☒ NO A schedule and plans have been established for completing the leachate collection system.

8a. SURFACE LEACHATE SPRING
☒ YES ☐ NO Small seeps along the landfill toe. Collected in a ditch and pumped to a sewer.

9. RECORDS OF LEACHATE ANALYSIS
☒ YES ☐ NO

10. GAS MONITORING
☒ YES ☐ NO

11. GROUNDWATER MONITORING WELLS
☒ YES ☐ NO

12. ARTIFICIAL MEMBRANE LINER INSTALLED
☐ YES ☒ NO Refuse deposited directly on the dredge spoils base.

13. SPECIFIC CONTAINMENT MEASURES *(Clay Bottom, Sides,etc)*
☐ YES ☒ NO

14. FIXATION *(Stabilization)* OF WASTE
☐ YES ☒ NO

15. ADEQUATE CLOSURE OF INACTIVE PORTION OF FACILITY
☒ YES ☐ NO

16. COVER*(Type)*

Dredge spoils, common burrow, select B bank sand.

16a. THICKNESS

6" on flats, slopes 1-2 foot. Final closure 2'.

16b. PERMEABILITY

Unknown, tests performed by Richardson Associates up to 9 years ago, records not available..

16c. DAILY APPLICATION
☒ YES ☐ NO

SECTION 2

ORIGINAL (Red)

FIELD TRIP REPORT

Pigeon Point Landfill
TDD No. F3-8101-17
EPA No. DE - 27

INTRODUCTION

Field Investigation Team, Region III (FIT III) conducted a Site Inspection/ Sampling of the Pigeon Point Landfill on February 5, 1981. This is an active, solid waste landfill, operated by the State of Delaware, Solid Waste Authority, and is located in New Castle, Delaware. FIT III personnel included "non responsive based on revised scope" "non responsive based on revised scope" Site Investigation Team Leader (SITL)] "non responsive based on revised scope" "non responsive based on revised scope" During the inspection they were accompanied by "non responsive based on revised scope" from Duffield Associates (a private environmental consulting firm which is contracted by the State of Delaware to monitor the landfill) and "non responsive based on revised scope" from NEIC/ Interra who were present to conduct a technical audit at the request of the Environmental Protection Agency (EPA) Region III Deputy Project Officer (DPO).

Water samples from two monitoring wells, two surface water locations, two leachate collection systems and one soil sample were obtained from the landfill. Water samples from two off-site water supply wells were also obtained on the above date. The weather was clear, sunny and cold (23° F) with 5 to 10 mph winds from the southwest.

The landfill was also visited on the previous day, February 4, 1981, in order to determine the level of safety necessary to conduct the sampling on February 5, 1981. At this time, FIT III personnel ("non responsive based on revised scope" "non responsive based on revised scope" were accompanied by Mr "non responsive based on revised scope" and Mr. "non responsive" "non responsive based on rev" from Duffield Associates and the personnel from NEIC/Interra.

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CONTACTS

Mr. Ray Trout	Landfill Supervisor 302-571-3457
Nonresponsive based on revised scope	Duffield Associates Newark, Delaware 302-738-0703
Joe Draka	Artesion Water Company Newark, Delaware 302-453-6900
Walt Luben Dave Beattie	ICI Americas, Atlas Point Plant New Castle, Delaware 302-575-4676

PERTINENT COMMENTS

Joe Draka

Well #3 (Artesion Water Company, Castle Hills) is the most frequently used. As of January 15, 1981, (b) (9) in 1959 (b) (9)(b) (9)

Dave Beattie

Well #9 (ICI Americas, Atlas Point Plant) has a (b) (9)(b) (9)(b) (9) back pressure; a pumping rate of (b) (9) In December, 1980, the non-(b) (9)(b) (9)(b) (9) the Delaware highway reference point.

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Nonresponsive based on revised scope

PVC and metals sludges were disposed of in the landfill proper. Sewage sludges are deposited on the area north of the landfill, outside of the dredge spoil dike.

During periods of low precipitation, the leachate collection swale along the south perimeter of the landfill collects seepage from the base of the landfill. This effluent is collected in a small holding pond and pumped up into the underdrain perimeter leachate collection system. The combined effluent from these two systems is sewered and terminates in a local treatment plant.

During periods of high precipitation, the swale along the south perimeter also collects surface run-off. If precipitation is extreme enough, the initial flush from run-off moving along the swale is retained and pumped. This hopefully contains most of the seepage in the swale at that moment. When water volume becomes high enough, the continued flow is diverted over a small weir and flows directly into the Delaware River.

During a telephone conversation on 2/2/81 -

The north and east perimeters of the landfill are underlain by an underground-underdrain leachate collection system. This system does not collect surface run-off. The outfall for this system is on the east perimeter of the landfill. From here, the effluent is sewered and terminates in a treatment plant.

Several years ago, Duffield Associates performed tests on the dredge spoils materials. Holes were dug in the materials, allowed to fill with water, and were sampled. The samples had a high metals content.

ORIGINAL (Red)

An incomplete piezometric gradient between monitoring wells along the south perimeter of the landfill indicates a direction of flow toward the east. A complete piezometric study of the area has not been completed.

Well #28 (Pigeon Point Landfill) has the longest history of usage and is one of the most productive. Placed in 1976, it has 53.2 feet of total depth, including 2 feet of above ground casing. It has a 4 foot screen and the screen interval is -31.4 feet to -35.4 feet. The top of the casing is at a 17.8 foot elevation.

Well #1A (Pigeon Point Landfill) is 32.5 feet deept including 1.5 feet of above ground casing. Five feet of screen and the interval is -9.8 feet to -4.8 feet. The top of the casing is at 22.65 feet, including the 1.5 feet of stickup.

Both wells have over a 15 gal/min. recharge rate and should be sampled immediately after the bailing.

Ray Trout - telephone conversation on 2/9/81

The swale and pond leachate collection system along the south perimeter are temporary. An underdrain system, as a continuation of the system along the north and east perimeters, has been planned. Its installation has been delayed in order to coincide with the construction of the steam generation plant, in the same location.

No lining was installed in the landfill. The dredge spoil base was tested and considered adequate for containment.

OBSERVATIONS

The following observation was made during the site visit:

The OVA and HNU was used to monitor organic vapor concentrations throughout the landfill. The OVA is sensitive to methane, while the HNU does not recognize methane. Where vapor concentrations are registered by the OVA, but not by the HNU, the vapor is considered to probably be methane. Attachment 6.1 presents values for selected locations.

ACTION ITEMS

Forward a copy of the sample results to:

Pat Canzano
Delaware Solid Waste Authority
Box 981
Dover, Delaware 19901

Dave Beattie
ICI Americas, Atlas Point Plant
New Castle, Delaware 19720

B.T. Lakshman
Artesion Water Company
666 Churchman's Road
Newark, Delaware 19702

SECTION 3

SAMPLING LOG

ORIGINAL (Red)

Pigeon Point Landfill
TDD No. F3-8101-17
EPA No. DE - 27

Sampling Location #1

Well Water Sample
Artesion Water Company, Castle Hills Well #3
Tap was run for five (5) minutes before sampling.
Full sample split accepted by Mr. Joe Draka of
Artesion Water Company.

Photo #1. Time: 1022.

Organic: C-0408; Tags # 1202-1205,1244
Inorganic: MC-8166; Tag # 1245

Sampling Location #2

Well Water Sample
ICI Americas, Atlas Point Plant, Well #9
Tap was run for five (5) minutes before sampling.
Dave Beattie declined a sample split.

Photo #2. Time: 1120.

Organic: C-0409; Tags # 1246-1250
Inorganic: MC-8167; Tag # 1251

Sampling Location #3

Well Water Sample
Pigeon Point Landfill, Monitoring Well #1A
This well intercepts the Columbia formation. Prior to sampling the well was bailed until constant values for pH (6.4) and conductivity (3000 mv) were obtained for eight consecutive bails. A total of 13 bails were removed from the well. The pH meter was temperture corrected, and standardized on site. The conductivity meter is not temperature correctable for temperatures below 50° F. Conductivity readings indicate only a constancy and not an absolute value. Depth, from the top of the standpipe casing to water surface, is approximately 19 feet. Bert Hewton from Duffield Associates, declined sample splits on all site locations. Samples were obtained from approximately one meter above the bottom of the well. Sample water was slightly clouded.

Photo #5.

Organic: C-0410; Tags # 1252-1256
Inorganic: MC-8168: Tag # 1257

ORIGINAL (Red)

Sampling Location #4

Surface Water Sample
Northwest Drainage Pond
This is a small pond of standing water located outside of, but immediately adjacent to, the northwest corner of the landfill, near the entrance road. The sample was obtained by the outfall of a pipe. The pool surface was frozen and had to be chopped through to obtain the sample.

Photo #3. Time: 1240.

Organic: C-0411; Tags # 1258-1262
Inorganic: MC-8169; Tag # 1263

Sampling Location #5

Surface Water Sample
North Swale Drainage
This is a drainage ditch which runs outside of the dredge spoil dike which forms the north perimeter of the landfill proper. Fields, used for depositing municipal sludge, are located just north of this swale. The swale also drains several small ponds and ditches to the west. This ditch is tidal influenced and samples were obtained when the tide was approximately three hours down from a high tide time for Wilmington, Delaware. Surface ice had to be broken through.

Photo #S-5. Time: 1554.

Organic: C-0412; Tags # 1264-1268
Inorganic: MC-8170: Tag # 1269

Sampling Location #6

Well Water Sample
Pigeon Point Landfill, Monitoring Well #28
This well intercepts the Potomac formation. Prior to sampling, the well was bailed to constant pH (6.8) and conductivity (1,150 mv). A total of 15 bails were removed.

Photos # S-11 to S-13. Time: 1503.

Organic: C-0413: Tags # 1270-1274
Inorganic: MC-8171; Tag # 1275

ORIGINAL (Red)

Sampling Location #7	Aqueous Leachate Sample South Leachate Pond Seepage from the south side fo the landfill and overland run-off are collected in this pond. The sample was obtained from an enclosed wet well, from which the effluent is pumped up to the outfall of the north and east perimeter underdrain system. The sump pump had been running for several hours. An oil sheen was observed on the water when it was poured into the sample containers. Photo # 5. Time: 1430 Organic: C-0414; Tags # 1276-1280 Inorganic: MC-8172; Tag # 1281
Sampling Location #8	Aqueous Leachate Sample Outfall, perimeter leachate collection system. The north and east perimeters of the landfill are underlain by a buried underdrain leachate collection system. The sample was obtained from an open manhole at the outfall of this system. From this point, the effluent is piped to a municipal sewer system and treatment plant. Photo #4. Time: 1330. Organic: C-0415; Tags # 1282-1287 Inorganic: MC-8173: Tag # 1288
Sampling Locations #9 & 9A	Composite Soil Sample from undisturbed dredge spoils. SL #9 - Brown clay with organge and grey mottling. The sample was obtained from the top 6 to 8 inches of soil after the vegetation of reeds had been removed. This location was in the southwest corner of the landfill. Photos # S-2 to S-4. Time: 1529. SL #9A - Grey clay with organge mottling. The sample was obtained from the wall of an excavation pit, at approximately a four foot depth. This location is on the west side of the landfill where excavation for new facility buildings is taking place. Photo #S-6. Time: 1605.

ORIGINAL (Red)

Labs

Organic Samples:	West Coast Technical Service, Inc. 17605 Fabrica Way, Suite D Cerritos, California 90701
Inorganic Samples:	VERSAR, Inc. 6621 Electronics Drive Springfield, Virginia 22151
Soil Sample:	NEIC Labs Denver, Colorado

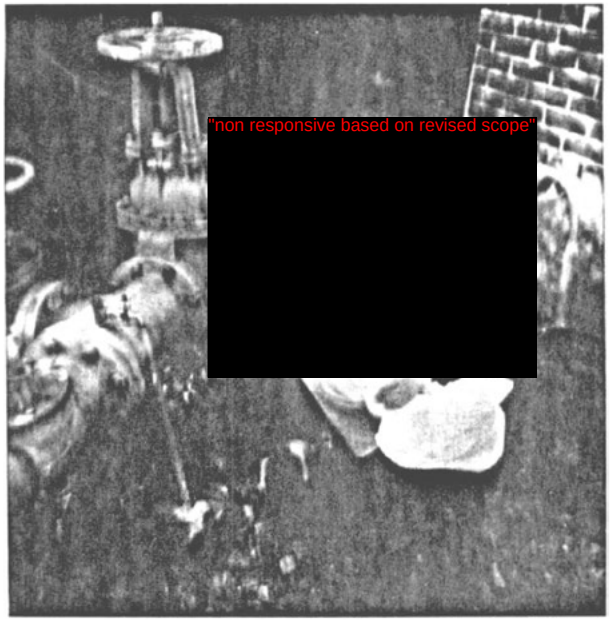
SECTION 4

ORIGINAL (Red)

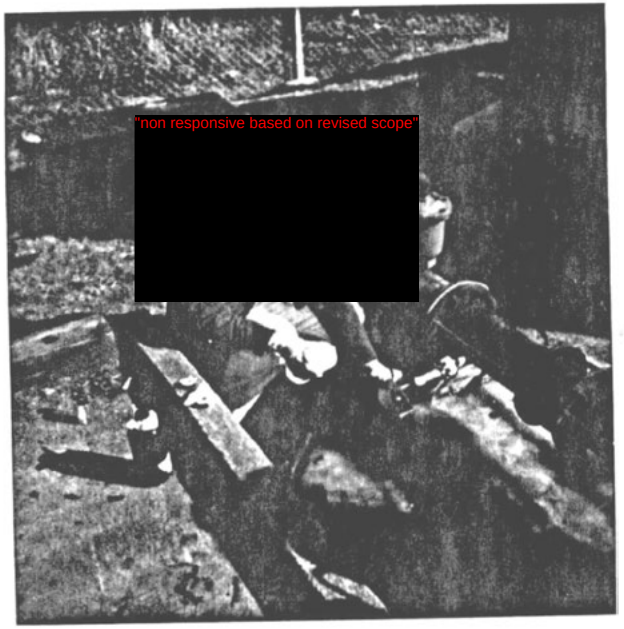
PHOTOGRAPHIC LOG

Pigeon Point Landfill
TDD No. F3-8101-17
EPA No. DE - 27

Photo #1	Sampling Artesion Water Company Castle Hills Well #3 (SL #1)
Photo #2	Sampling ICI Americas Atlas Point Plant Well #9 (SL #2)
Photo #3	Sampling the Northwest Drainage Pond (SL #4)
Photo #4	Sampling the outfall Perimeter Leachate Collection System (SL #8)
Photo #5	Sampling the South Leachate Collection Swale (SL #7)
Photo S-1	Sampling Pigeon Point Well #28 (SL #6)
Photo S-2	Sampling Dredge Spoils (SL #9)
Photo S-3	Dredge Spoils (SL #9)
Photo S-4	Location and vegetation of Dredge Spoils (SL #9)
Photo S-5	Sampling the North Drainage Swale (SL #5)
Photo S-6	Sampling Dredge Spoils (SL #9A)



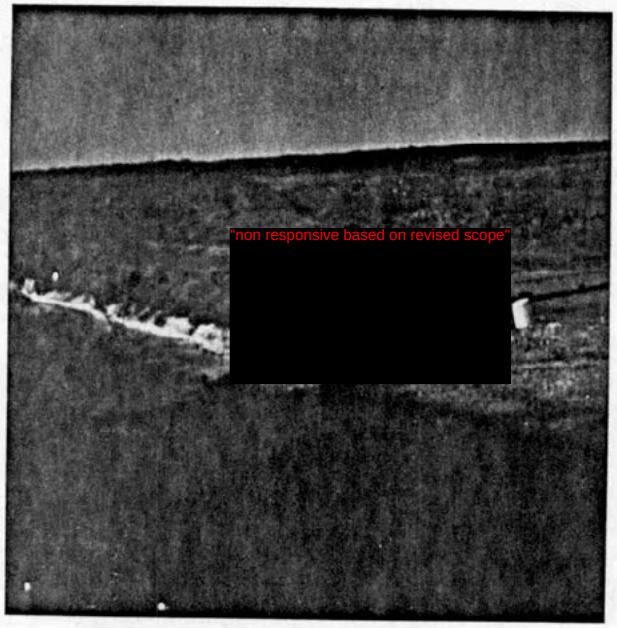
#1 1022 2/5/81 Pigeon Point Landfill
F3-8101-17
Artesian Water Co. SL#1
Castle Hills #3



#2 1120 2/5/81 Pigeon Point LF
F3-8101-17
Atlas Point Plant well # 9
ICI Americas SL#2

1237 2/5/81 PIGEON POINT Lf.
#3 F3-8101-17
Northwest Drainage Ditch
SL # 4

1335 2/5/81 PIGEON POINT Lf.
#4 F3-8101-17
Outfall, perimeter leachate
collection system SL # 8



#5 1402 2/5/81 PIGEON POINT Lf.
F3-8101-17
sobth leachate collection swale
SL#7

S-1 Pigeon Point Landfill
TDD # F3-8101-17

Sampling Well # 28

ORIGINAL
(Red)

2/5/81

[redacted]

S-X3 Pigeon Point Landfill
TDD # F3-8101-17

Dredge Spoils
SL # 9

2/5/81

[redacted]

S-2 Pigeon Point Landfill

Sampling Dredge Spoils
SL # 9

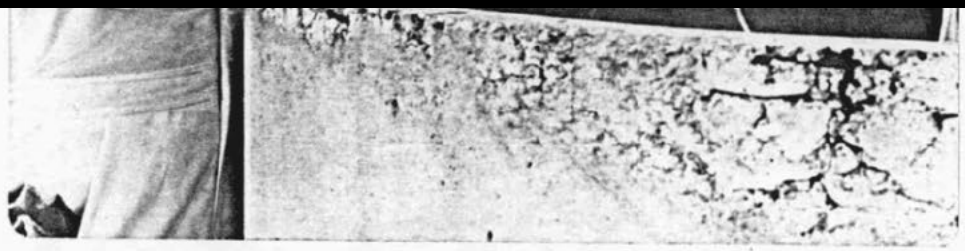
2/5/81

[redacted]

"non responsive based on revised scope"

S-1

ORIGINAL (Red)



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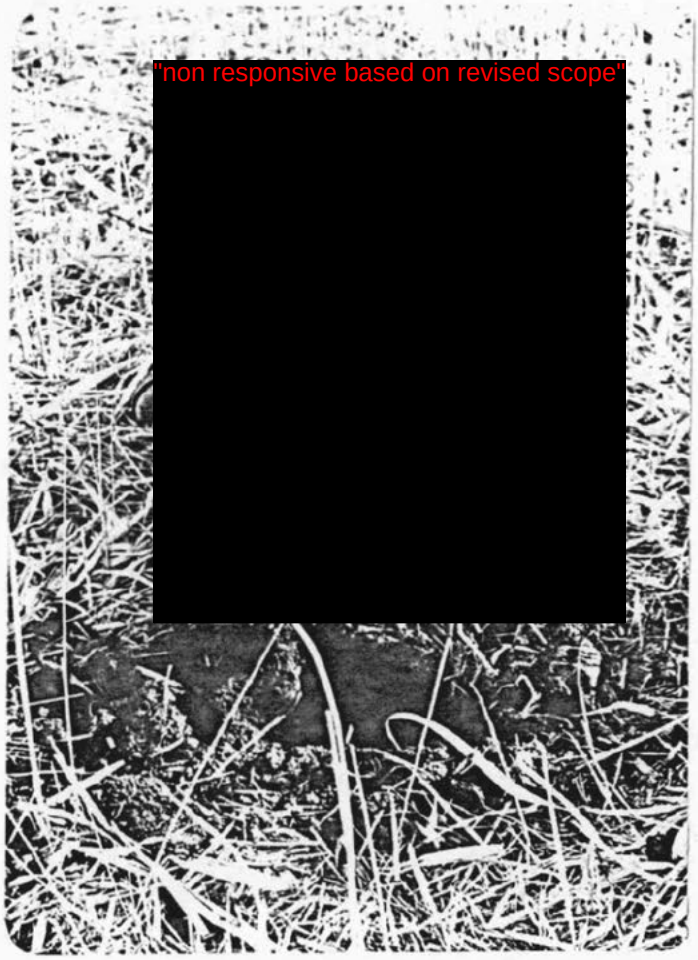


S-2

S-4 PIGEON POINT LANDFILL

location and vegetation of Dredge Spoils.

2/5/81

non responsive based on revised scope

ORIGINAL (Red)

S-5 PIGEON POINT LAND FILL

Sampling the North Drainage Swale SL #5

2/5/81

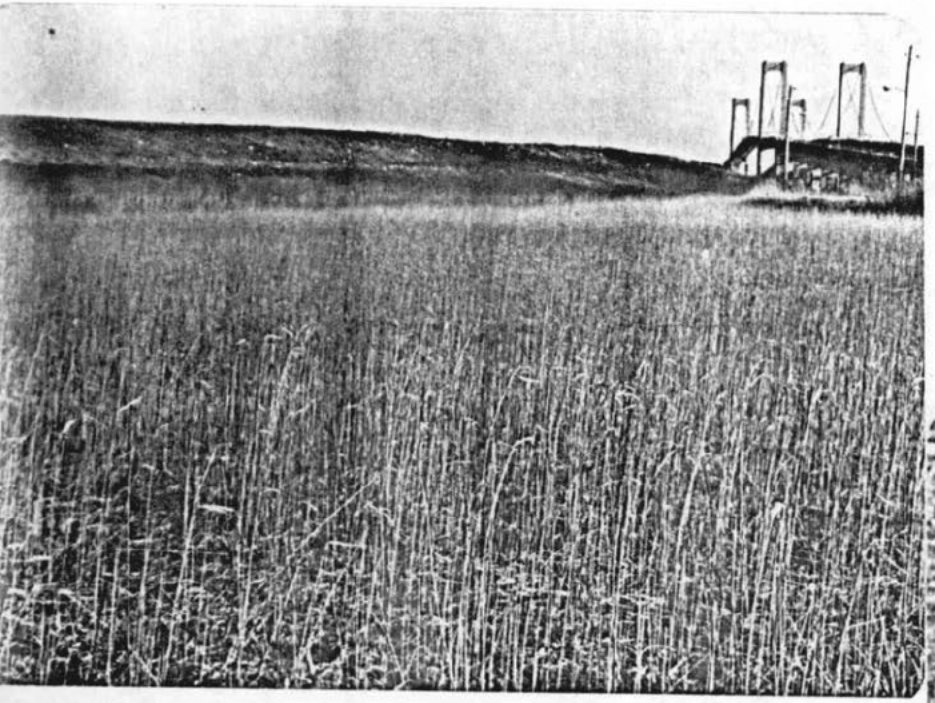
non responsive based on revised scope

S-6 PIGEON POINT LANDFILL

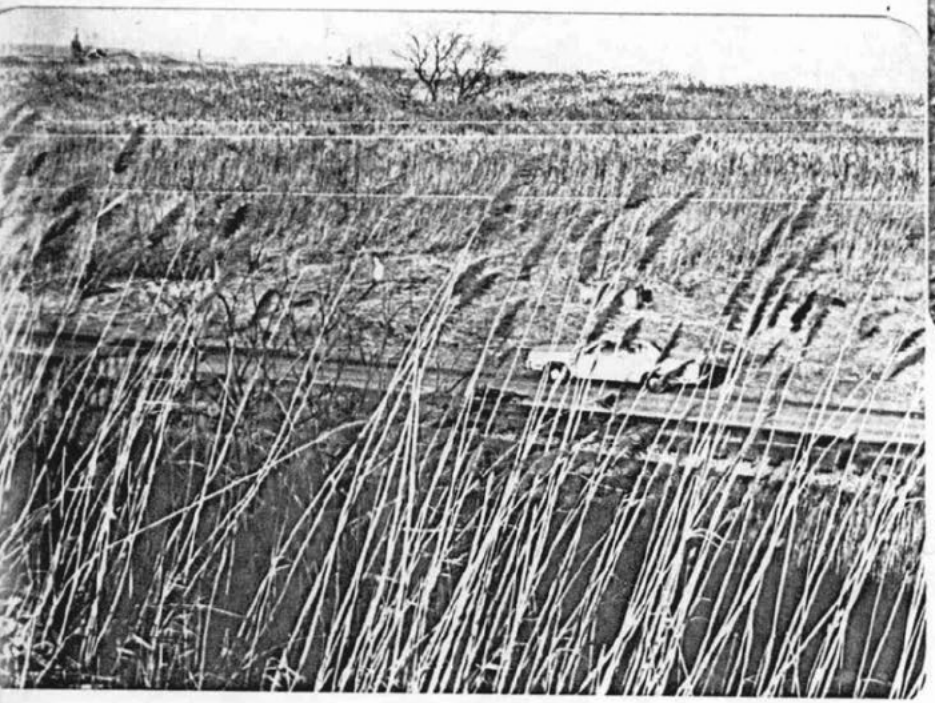
TDD# F3-8101-17

Sampling Dredge Spoils SL # 9A

non responsive based on revised scope



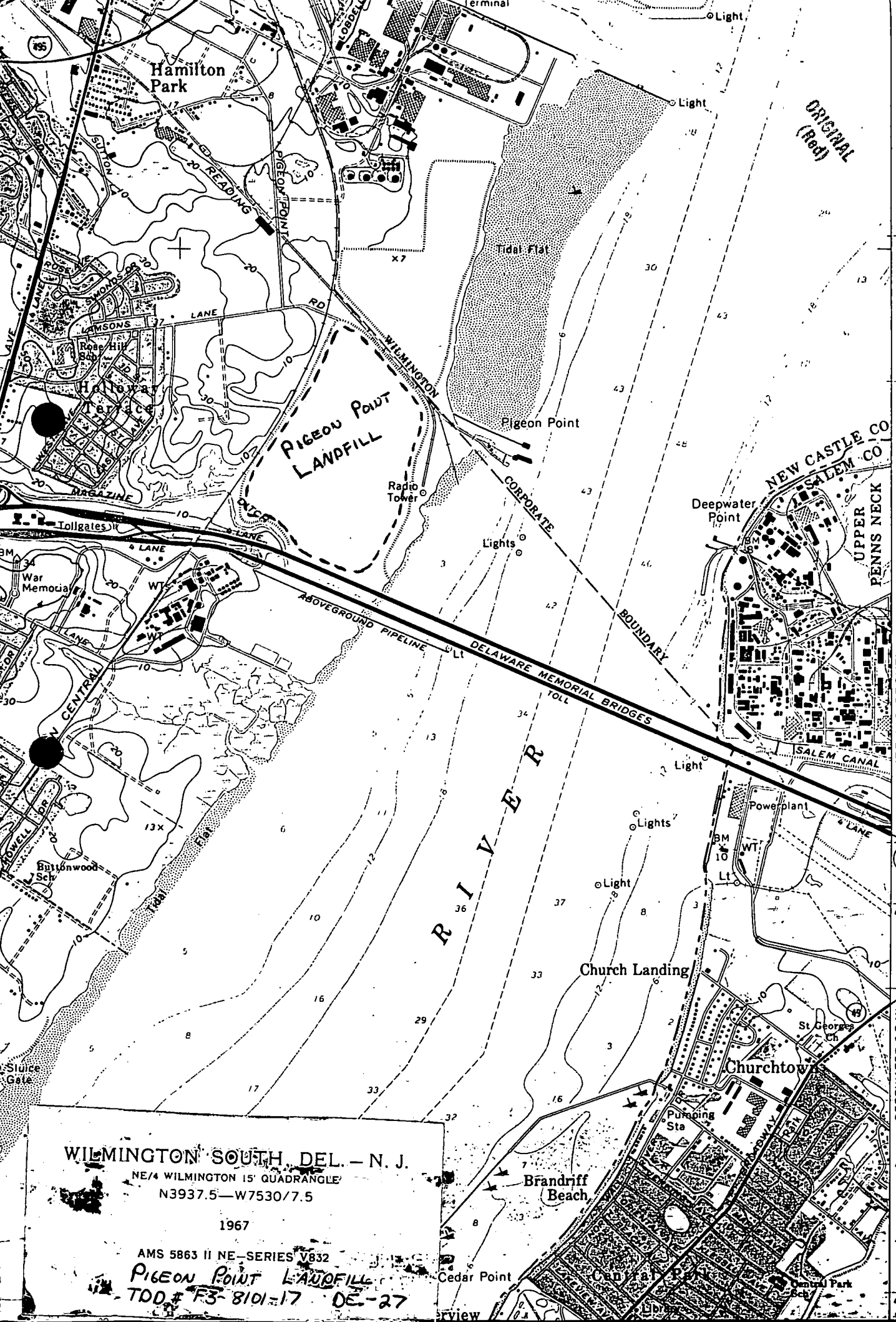
S-4



S-5

S-6

SECTION 5



WILMINGTON SOUTH, DEL. — N. J.

NE/4 WILMINGTON 15' QUADRANGLE

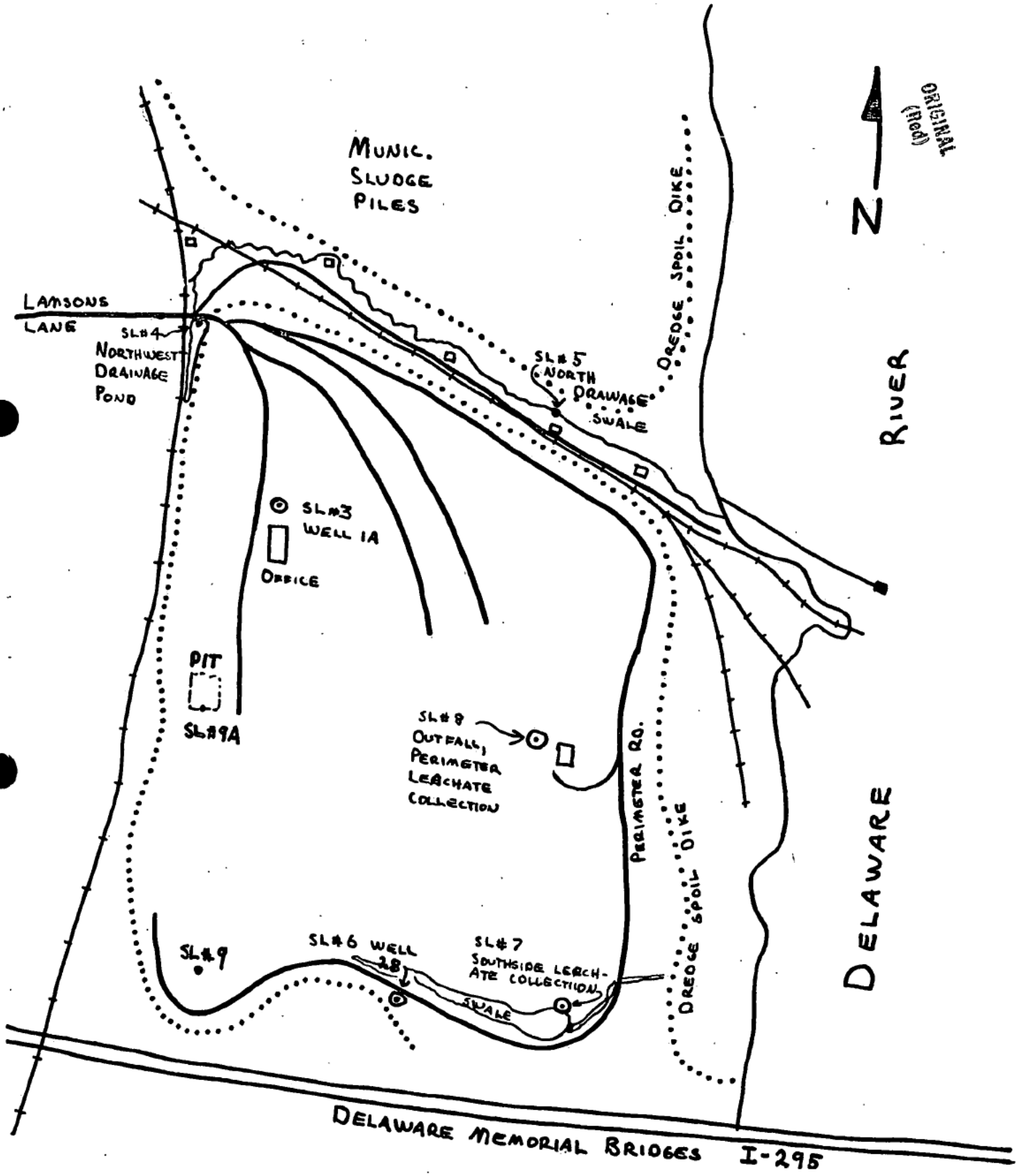
N3937.5—W7530/7.5

1967

AMS 5863 II NE—SERIES V832

PIGEON POINT LANDFILL

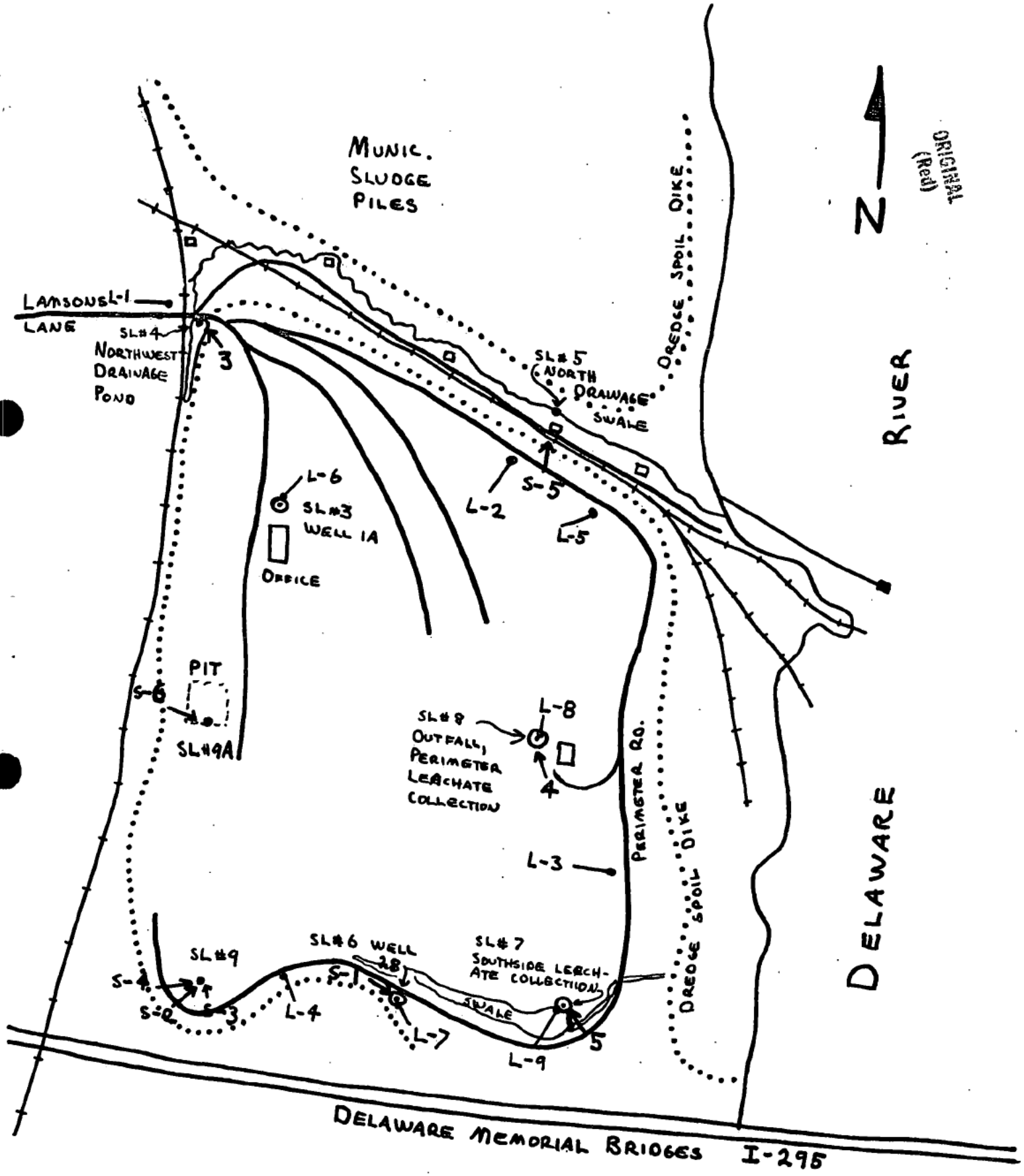
TDD # F3-8101-17 DE-27



PIGEON POINT LANDFILL

TDD# F3-8101-17 DE.-27

SAMPLE LOCATIONS



PIGEON POINT LANDFILL

TDD# F3-8101-17 DE.-27

PHOTO LOCATIONS # →

ORGANIC VAPOR READINGS —● (SEE ATTACHMENT 6.1)

ORIGINAL
(Red)

SECTION 6.1

ATTACHMENT 6.1

ORIGINAL (Red)

Pigeon Point Landfill
TDD No. F3-8101-17
EPA No. DE - 27

Site Inspection Report
Section IV B. - Field Measurements Taken
Continued

Location		Reading (ppm) OVA	HNU
L-1	Background, offsite to the west	< .5	0
L-2	Perimeter Road, North and Northeast Section	30 - 50	0
L-3	Perimeter Road, East Side	5 - 20	0
L-4	Perimeter Road, South Side	5 - 10	0
L-5	Well #31 (outside closed cap)	40 - 50	0
L-6	Well #1A (outside opened well)	120	---
L-7	Well #28 (probe inserted in the well head)	0	.5
L-8	Open manhole - perimeter, leachate collection system	12 - 14	0
L-9	Open wetwell - south leachate pond sump pump	70	130

NOTE: OVA (Organic Vapor Analyzer) detects organic vapors including methane gas; HNU does not detect methane gas.

SECTION 6.2

ATTACHMENT 6.2

SAFETY REPORT

ORIGINAL (Red)

Pigeon Point Landfill
TDD No. F3-8101-17
EPA No. DE - 27

Pigeon Point is a large landfill which has received varying amounts of known and unknown hazardous wastes. Standard procedure, before sampling sites of this type, is to employ the "mine-sweep" method to determine the level of safety needed during the actual sampling. The inspection on February 4 and 5, 1981, demonstrates the value and correct implementation of this method. A brief description of the safety related events during this inspection is reported.

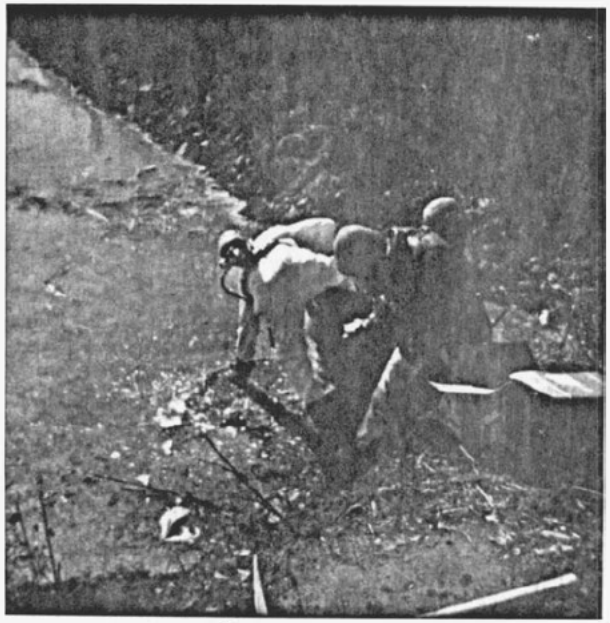
In order to reach four of the proposed sampling locations, it was necessary to circumnavigate the landfill, for a distance of 1.5 to 2 miles, along the perimeter road. On February 4, 1981, two FIT III personnel, dressed at Level "B" (on air) with the OVA, proceeded on foot from west to east along the road. They were followed at a 50 - 100 yard distance by two additional FIT III personnel driving the van. Within five minutes, and less than one quarter mile of travel, open air organic vapor levels rose to a continuous minimum of 30 ppm. Because, at this time, the specific nature of the vapor could not be determined and because the distance to the proposed sampling locations was of such extent that it would be impossible to reach them and return without the possibility of running out of air in a "hot" zone, this phase of operations was terminated.

On February 5, 1981, FIT III personnel returned. Using an HNU vapor analyzer (which is not sensitive to methane) in conjunction with the OVA, they proceeded with the safety inspection. Two FIT III personnel, dressed at Level "B", each carrying a monitoring device, again proceeded a third team member driving the van. The OVA continued to register vapors in the 10 - 30 ppm range, but the HNU did not register. Concluding that the vapor was in fact methane, the team was able to continue the inspection. Each sampling location was carefully inspected. In the wet well for the leachate collection pond on the south side of the landfill, both the OVA and HNU registered vapor levels near or over 100 ppm. It was determined that this location would be sampled at Level "B" protection. The rest of the sample locations were cleared to Level "D" protection.

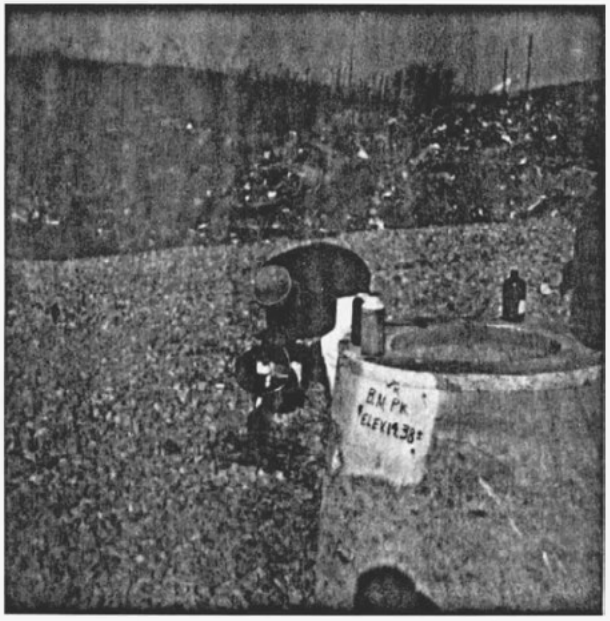
ORIGINAL (Red)

Employing the mine-sweep method, a properly equipped and trained FIT III team was able to determine the necessary level of safety, throughout a large area of operations, in a relatively short period of time; the safety operations on February 5, 1981, required less than four total man hours. As a result, sampling teams were able to move efficiently and confidently throughout the area, and avoided one instance of exposure to potentially harmful organic vapors.

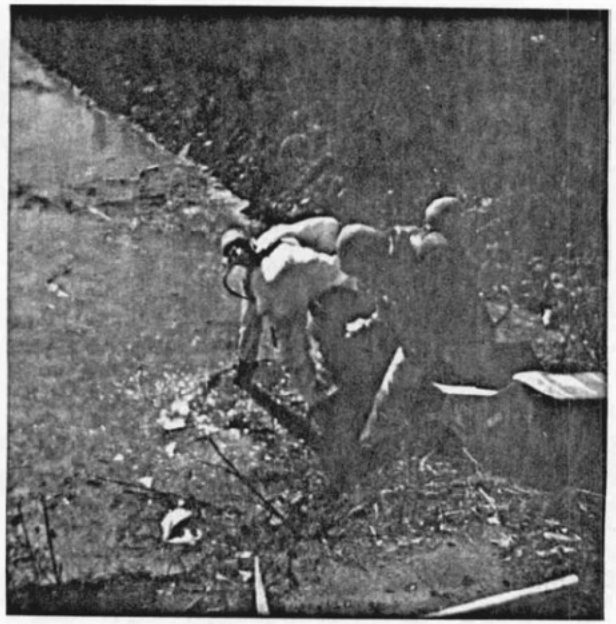
SECTION 6.3



1237 2/5/81 PIGEON POINT Lf.
#3 F3-8101-17
Northwest Drainage Ditch
SL # 4



1335 2/5/81 PIGEON POINT Lf.
#4 F3-8101-17
Outfall, perimeter leachate
collection system SL # 8



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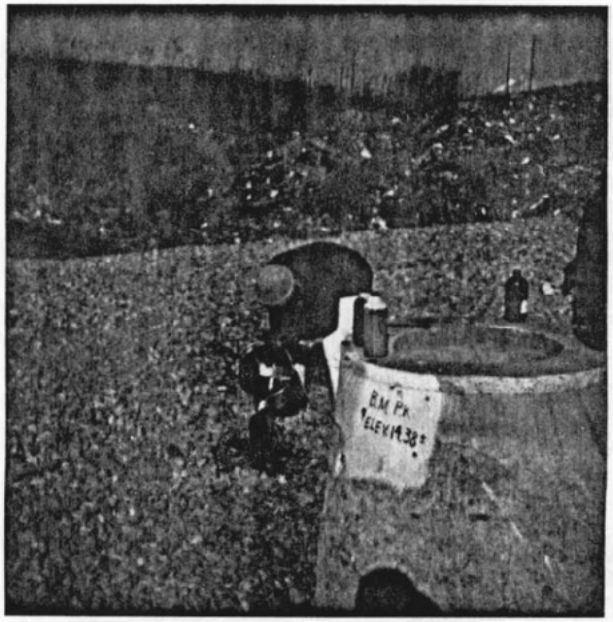
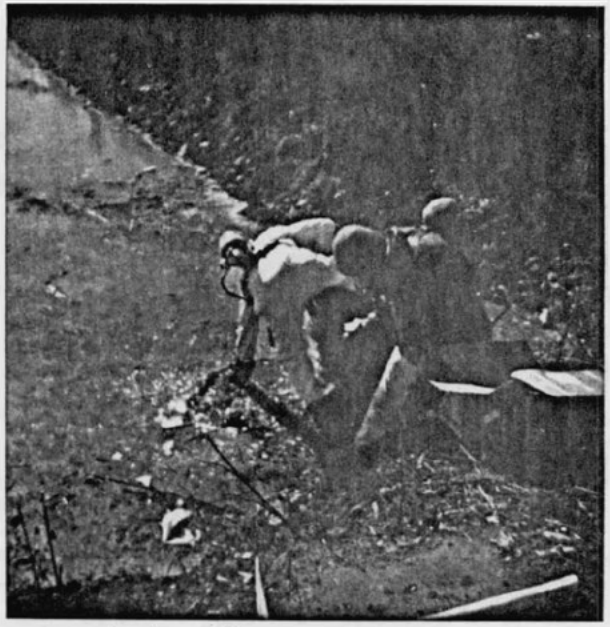
#3 F8-8101-17
Northwest Drainage Ditch
SL # 4

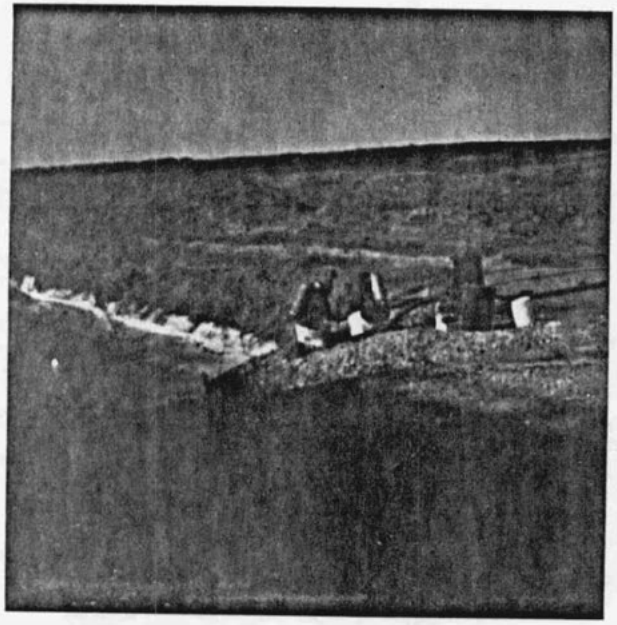


1335 2/5/81 PIGEON POINT LA.
#4 F3-8101-17
outfall, perimeter leachate
collection system SL # 8

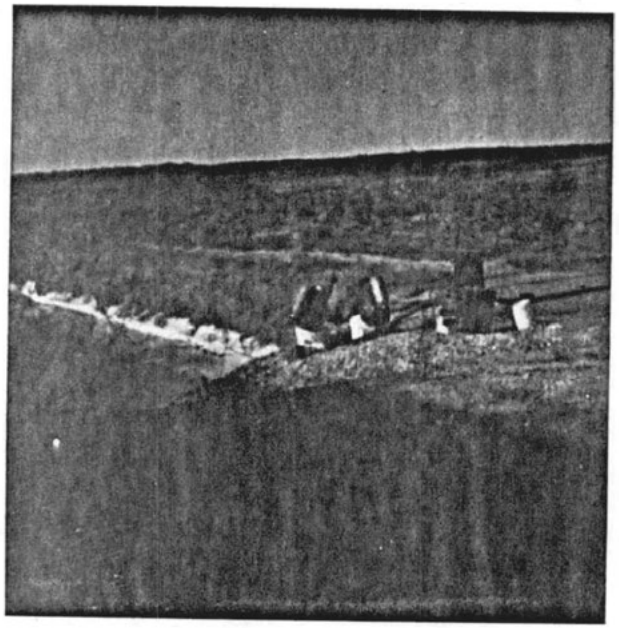


1237 2/5/81 Pigeon Point Lf.
#3 F3-8101-17
Northwest Drainage Ditch
SL # 4

1335 2/5/81 Pigeon Point Lf.
#4 F3-8101-17
Outfall, perimeter leechate
collection system SL # 8



#5 1402 2/5/81 PIGEON POINT Lf.
F3-8101-17
south leachate collection swale
SL#7



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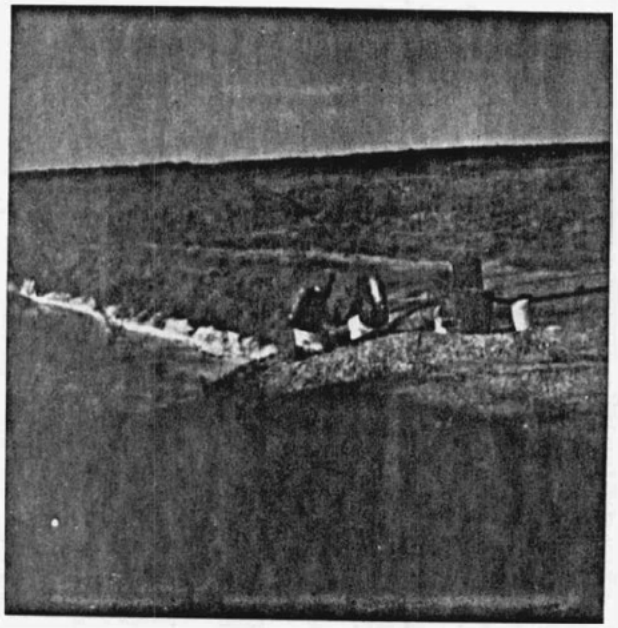
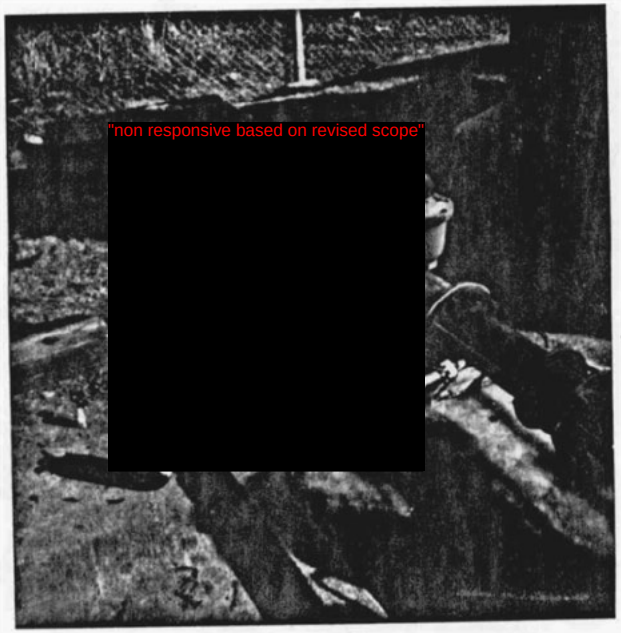
F3-8101-17
south leachate collection swale
SL#7



#5 1402 2/5/81 PIGEON POINT Lf.
F3-8101-17
south leachate collection swale
SL#7

#1 1022 2/5/81 Pigeon Point Landfill
F3-8101-17
Artesian Water Co. SL#1
Castle Hills #3



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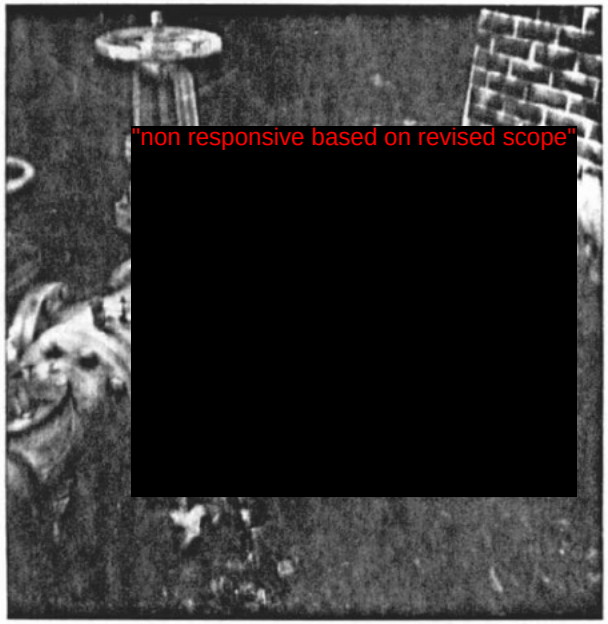
F3-8101-17
Atlas Point Plant well #9
ICI Americas SL#2



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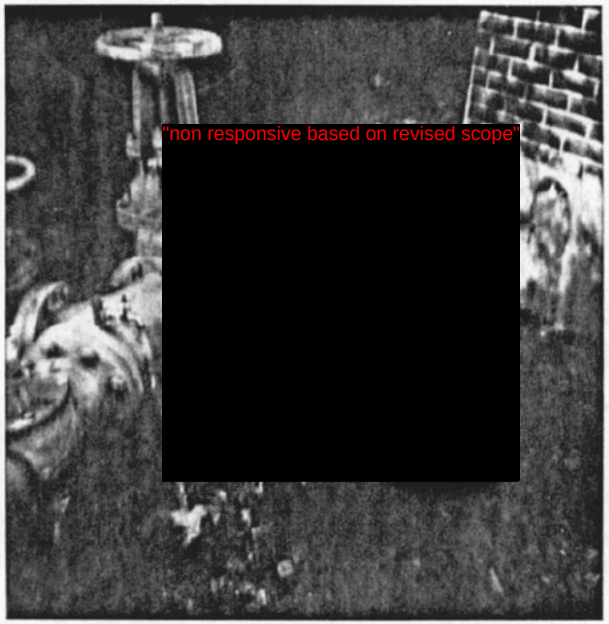
F3-8101-17
Artesian Water Co. SL#1
Castle Hills #3

#2 1120 2/5/81 Pigeon Point LF
F3-8101-17
Atlas Point Plant well #9
ICI Americas SL#2



#1 1022 2/5/81 Pigeon Point Landfill
F3-8101-17
Artesian Water Co. SL#1
Castle Hills #3

#2 1120 2/5/81 Pigeon Point Lft
F3-8101-17
Atlas Point Plant well # 9
ICI Americas SL#2

S-1 Pigeon Point Landfill
TDD # F3-8101-17

Sampling Well # 28

(Red)

2/5/81

non responsive based on revised scope

S-X3 Pigeon Point Landfill
TDD # F3-8101-17

Dredge Spoils
SL # 9

2/5/81

non responsive based on revised scope

non responsive based on revised scope

S-2 Pigeon Point Landfill

Sampling Dredge Spoils
SL # 9

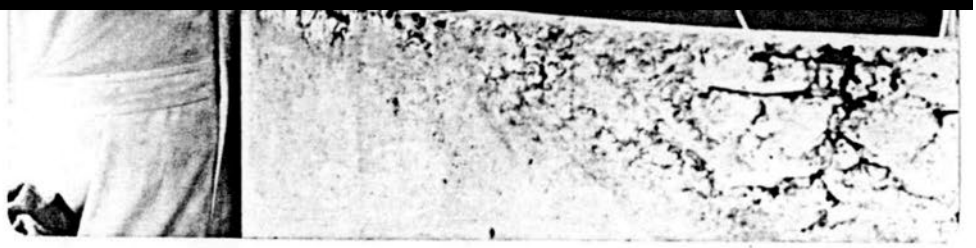
2/5/81

non responsive based on revised scope

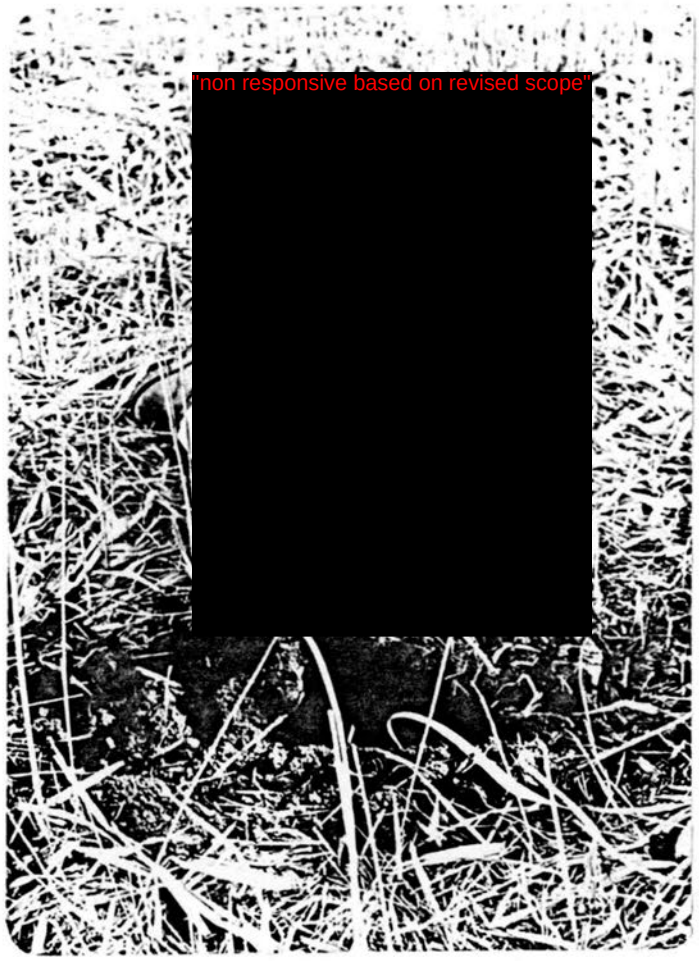
"non responsive based on revised scope"

ORIGINAL (Red)

S-1



S-3



S-2

S-1 Pigeon Point Landfill
TDD # F3-8101-17

Sampling Well # 28

ORIGINAL
(Red)

2/5/81

non responsive based on revised scope

S-X3 Pigeon Point Landfill
TDD # F3-8101-17

Dredge Spoils
SL # 9

2/5/81

non responsive based on revised scope

S-2 Pigeon Point Landfill

Sampling Dredge Spoils
SL # 9

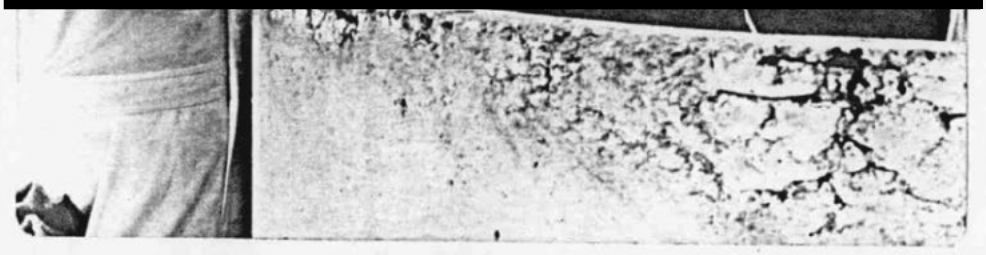
2/5/81

non responsive based on revised scope

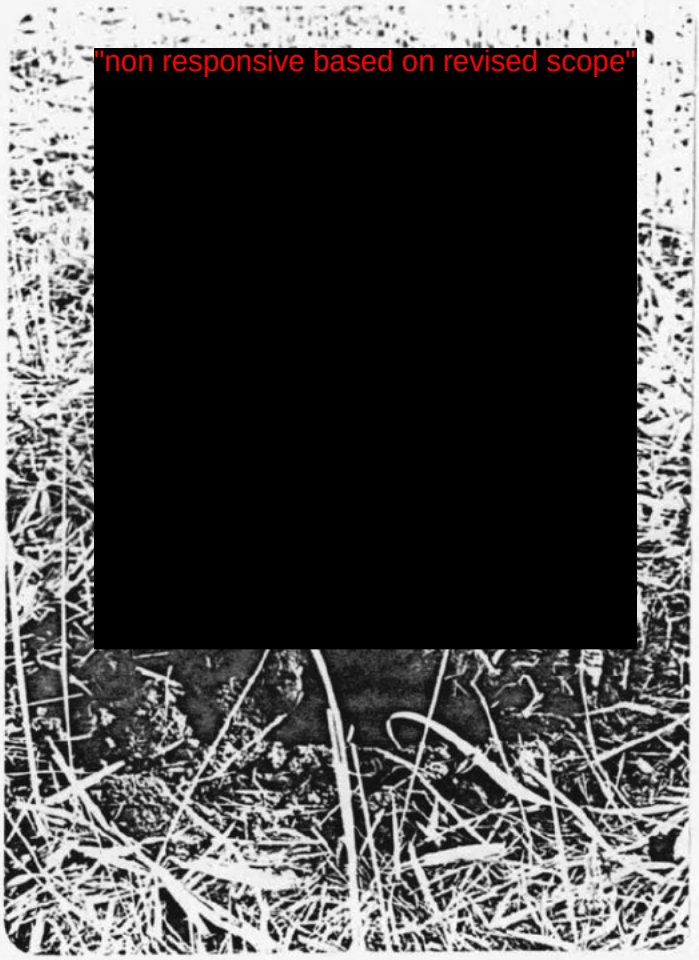
"non responsive based on revised scope"

ORIGINAL (Red)

S-1



S-3



S-2

S-1 Pigeon Point Landfill
TDD # F3-8101-17

Sampling Well # 28

ORIGINAL (Red)

"non responsive based on revised scope"

2/5/81

S-X3 Pigeon Point Landfill
TDD # F3-8101-17

Dredge Spoils
SL # 9

non responsive based on revised scope

2/5/81

S-2 Pigeon Point Landfill

Sampling Dredge Spoils
SL # 9

non responsive based on revised scope

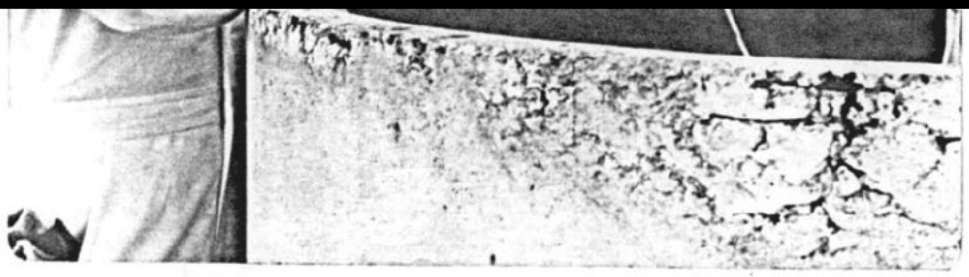
2/5/81

"non responsive based on revised scope"

[redacted]

S-1

ORIGINAL (Red)



S-3

"non responsive based on revised scope"

S-2

S-1 Pigeon Point Landfill
TDD # F3-8101-17

Sampling Well # 28

ORIGINAL
(Red)

non responsive based on revised scope

2/5/81

S-X3 Pigeon Point Landfill
TDD # F3-8101-17

Dredge Spoils
SL # 9

non responsive based on revised scope

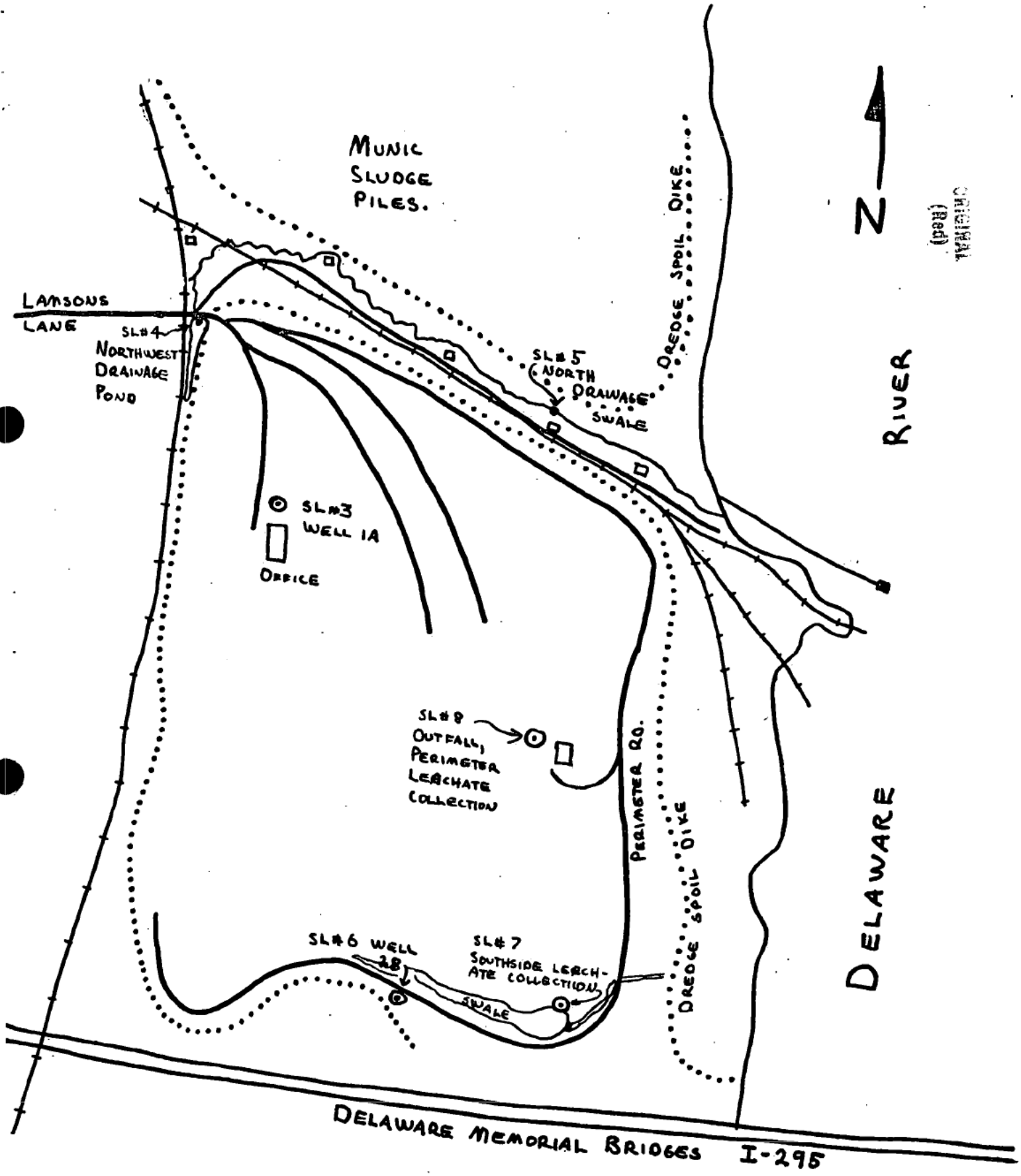
2/5/81

S-2 Pigeon Point Landfill

Sampling Dredge Spoils
SL # 9

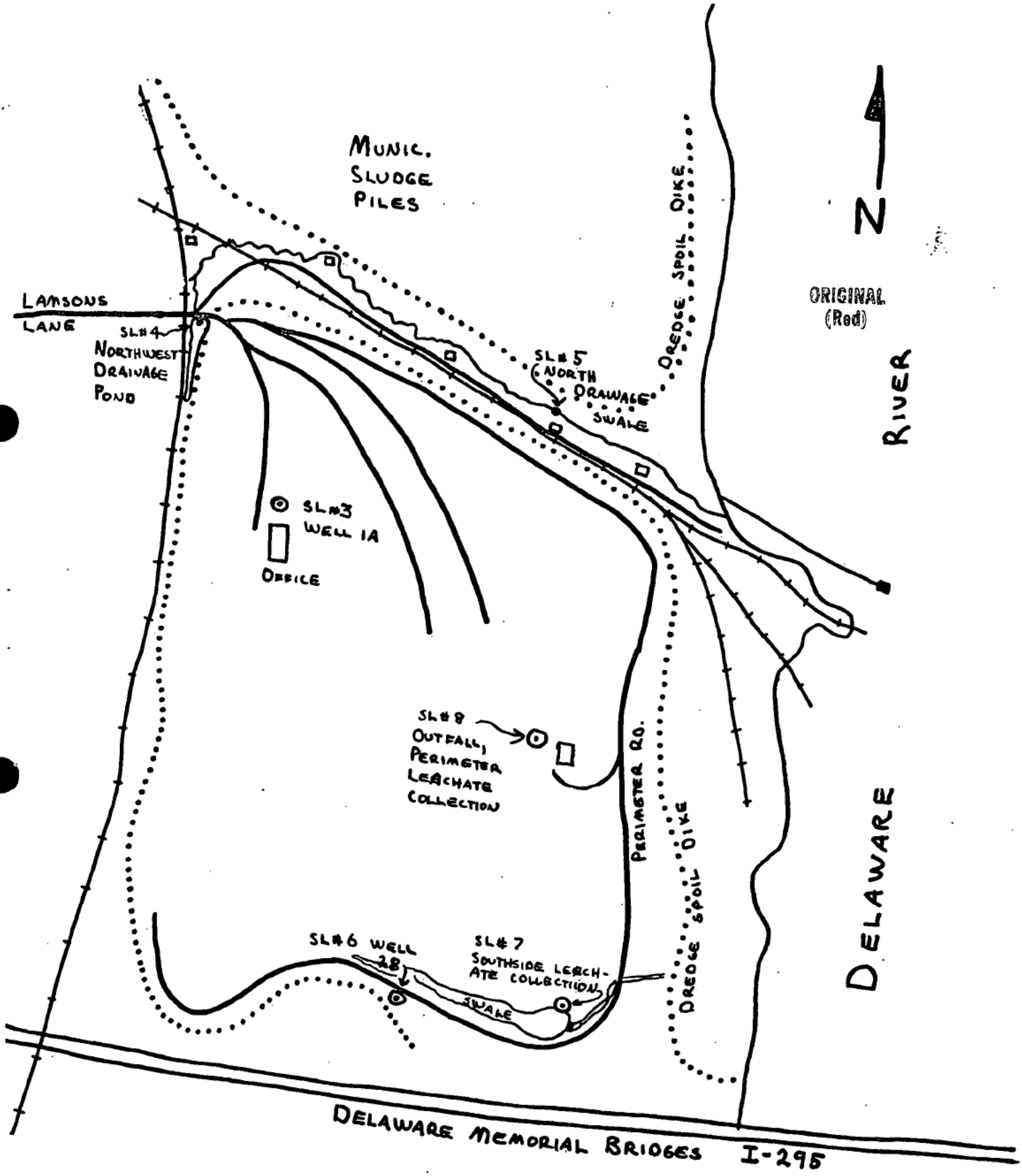
non responsive based on revised scope

2/5/81



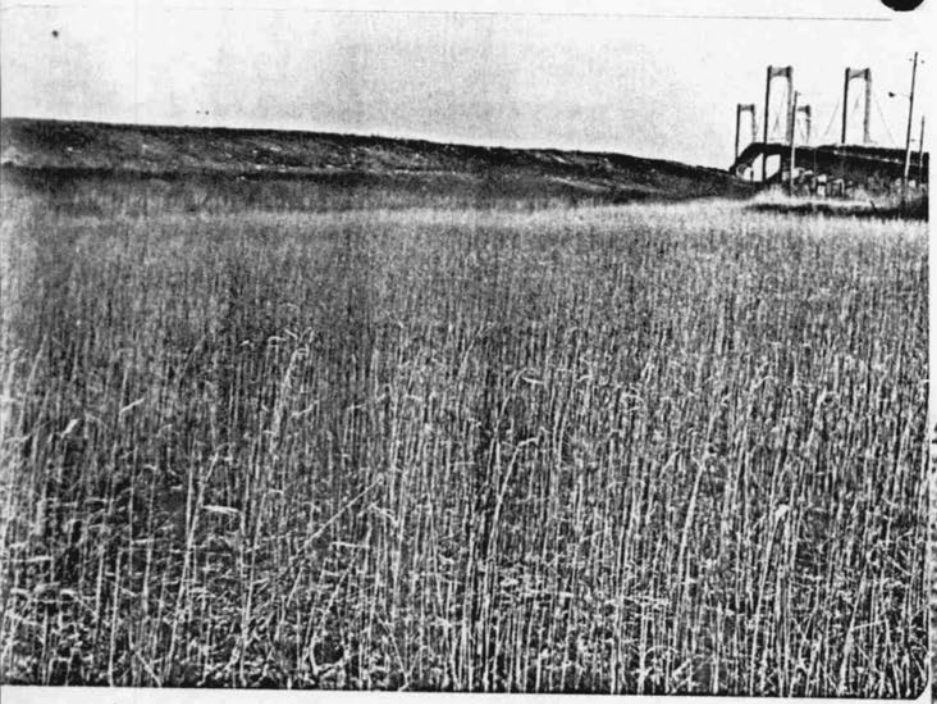
PIGEON POINT LANDFILL

TDD# F3-8101-17 DE.-27



PIGEON POINT LANDFILL

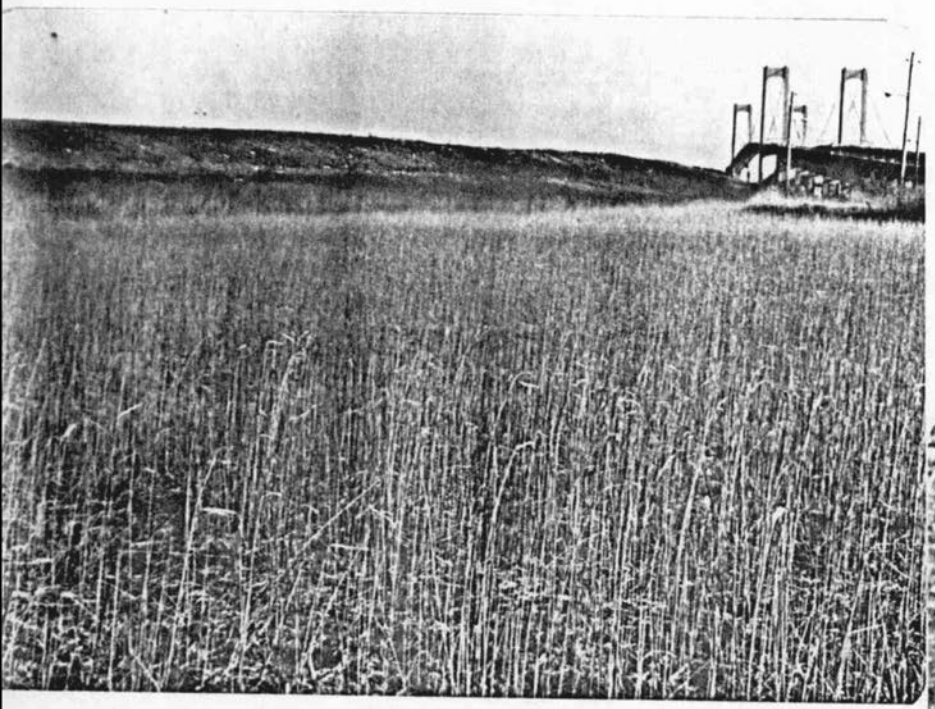
TDD# F3-8101-17 DE.-27



S-4

S-6

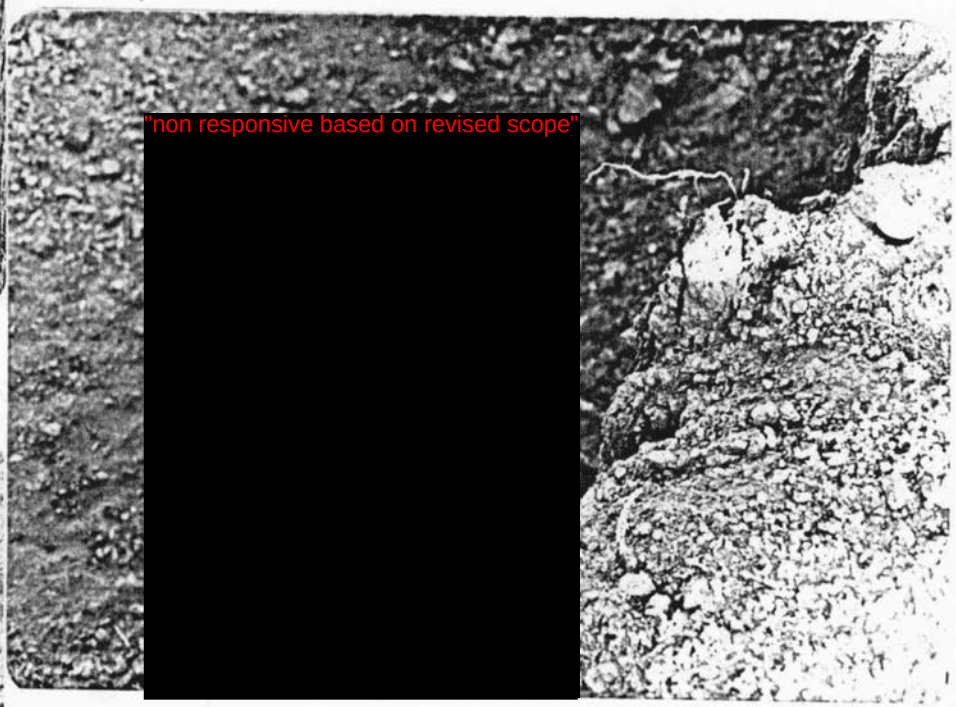
S-5



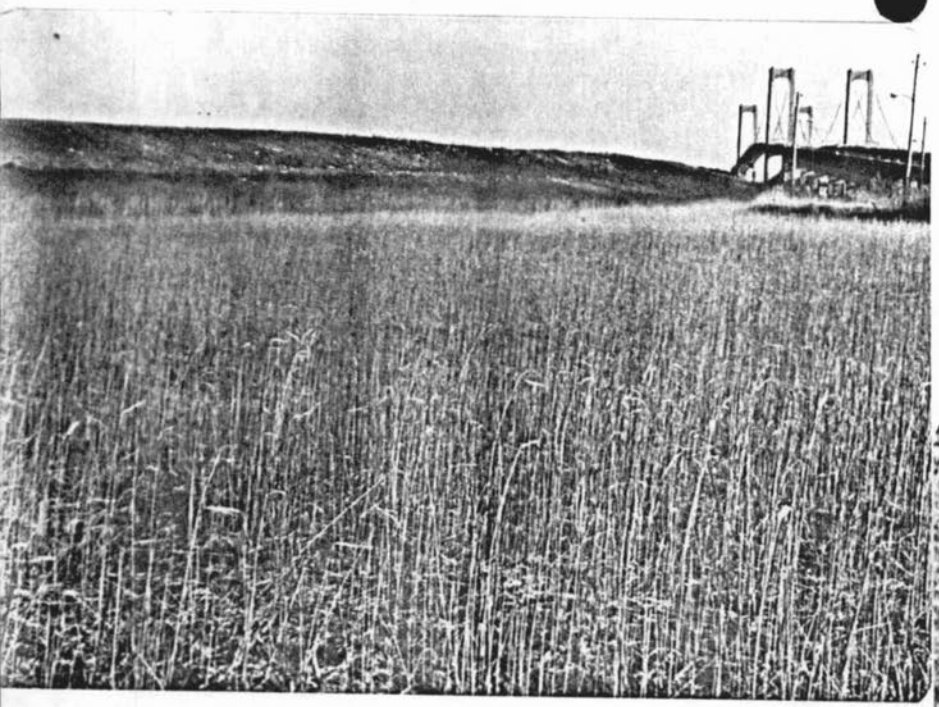
S-4

ORIGINAL
(Red)

S-5

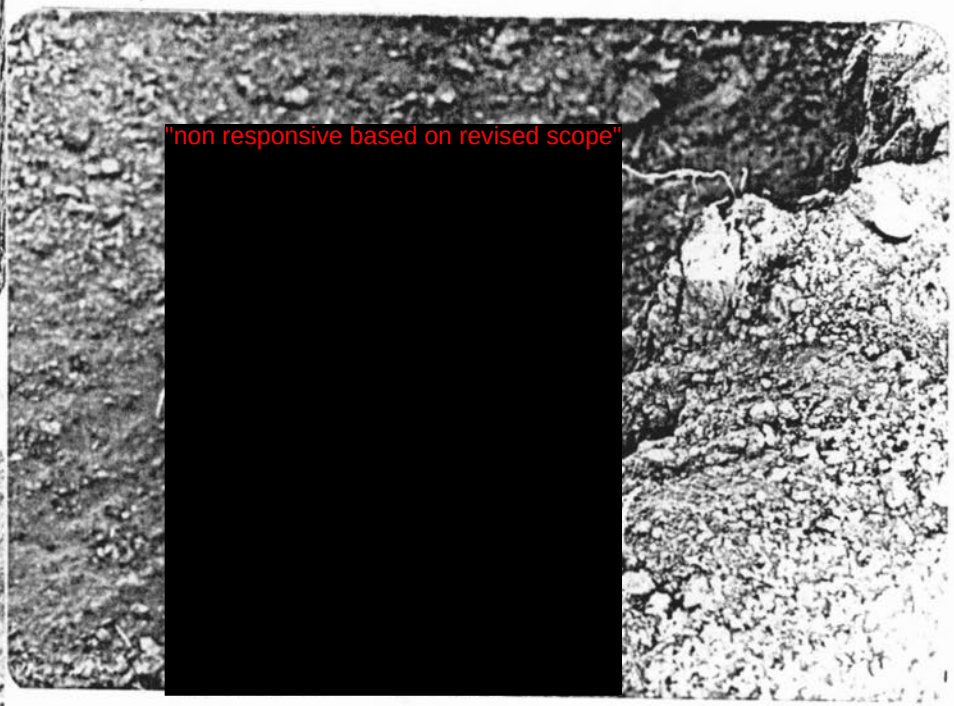


S-6

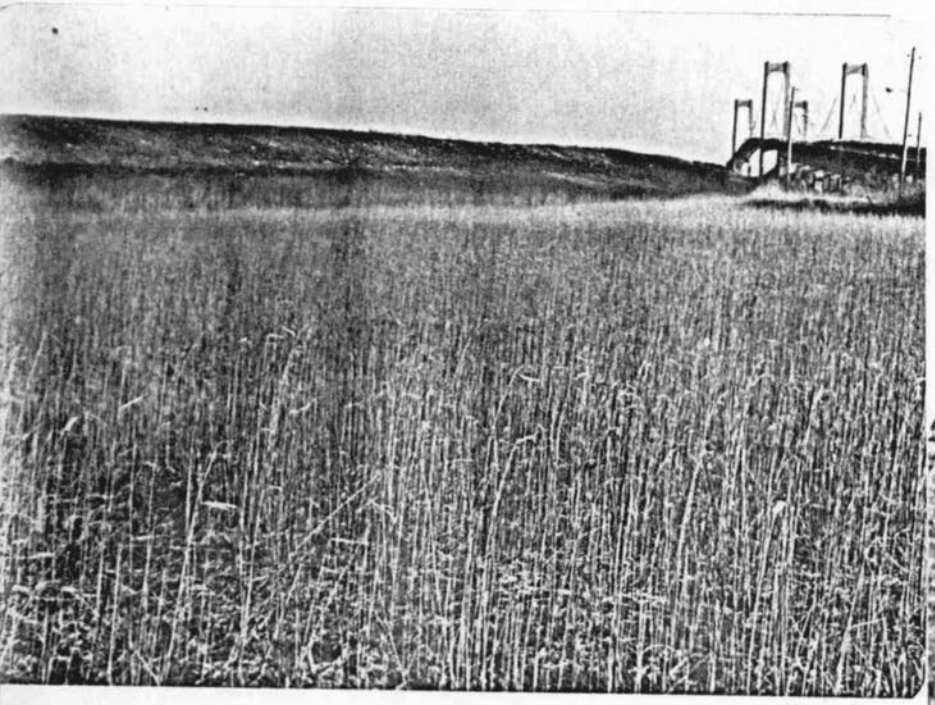


S-4

S-5

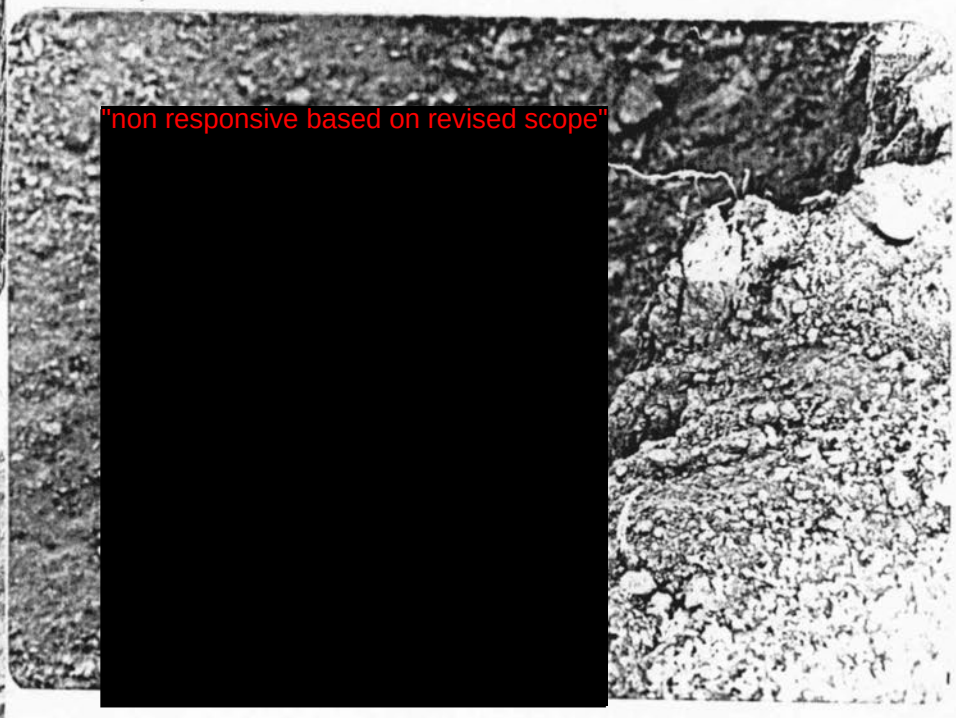


S-6



S-4

S-5



S-6

S-4 PIGEON POINT LANDFILL

location and vegetation of Dredge Spoils. SL #

non responsive based on revised scope

2/5/81

ORIGINAL (Red)

S-6 PIGEON POINT LANDFILL
TDD# F3-8101-17

Sampling Dredge Spoils
SL # 9A

non responsive based on revised scope

S-5 PIGEON POINT LAND FILL

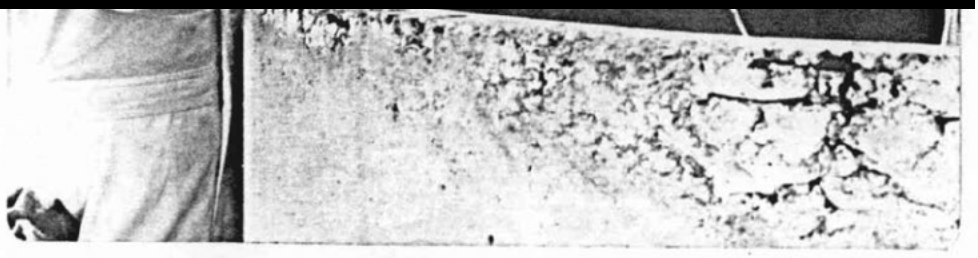
Sampling the North Drainage Swale SL #5

non responsive based on revised scope

2/5/81

"non responsive based on revised scope"

S-1



S-3

S-2

S-4 PIGEON POINT LANDFILL

location and vegetation of Dredge Spoils.

non responsive based on revised scope

2/5/81

S-5 PIGEON POINT LAND FILL

Sampling the North Drainage Swale SL #5

non responsive based on revised scope

2/5/81

S-6 PIGEON POINT LANDFILL
TDD# F3-8101-17

Sampling Dredge Spoils
SL # 9A

non responsive based on revised scope

ORIGINAL (Red)

S-4 PIGEON POINT LANDFILL

location and vegetation of Dredge Spoils.

non responsive based on revised scope

2/5/81

S-5 PIGEON POINT LAND FILL

Sampling the North Drainage Swale SL #5

non responsive based on revised scope

2/5/81

S-6 PIGEON POINT LANDFILL
TDD# F3-8101-17

Sampling Dredge Spoils
SL # 9A

non responsive based on revised scope

ORIGINAL (Red)

S-4 PIGEON POINT LANDFILL

location and vegetation of Dredge Spoils.

non responsive based on revised scope

2/5/81

S-5 PIGEON POINT LAND FILL

Sampling the North Drainage Swale SL #5

non responsive based on revised scope

2/5/81

S-6 PIGEON POINT LANDFILL

TOD# F3-8101-17

Sampling Dredge Spoils SL # 9A

non responsive based on revised scope

ORIGINAL (Red)